



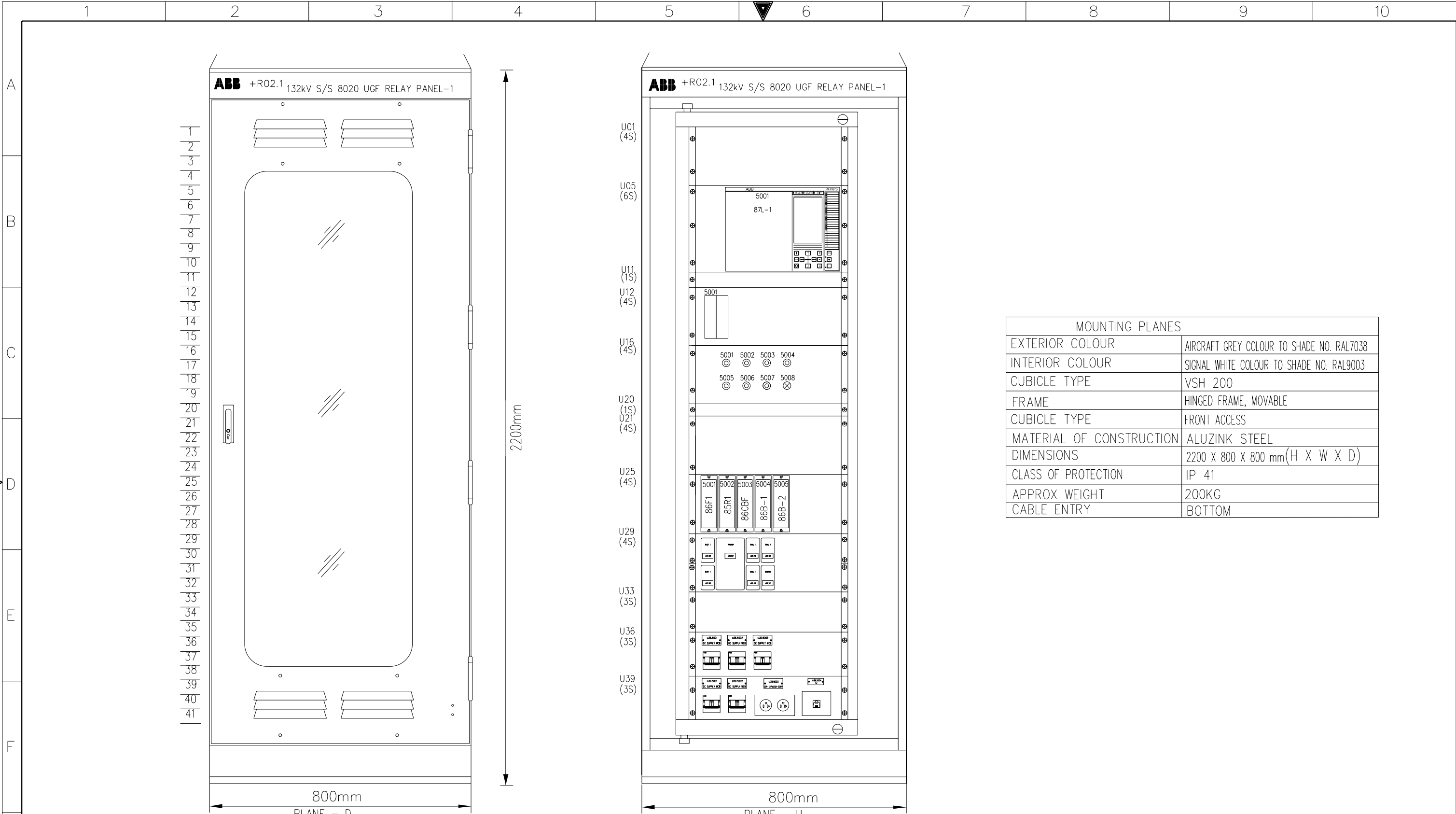


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A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																														
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NG/D2-D (2012/01)
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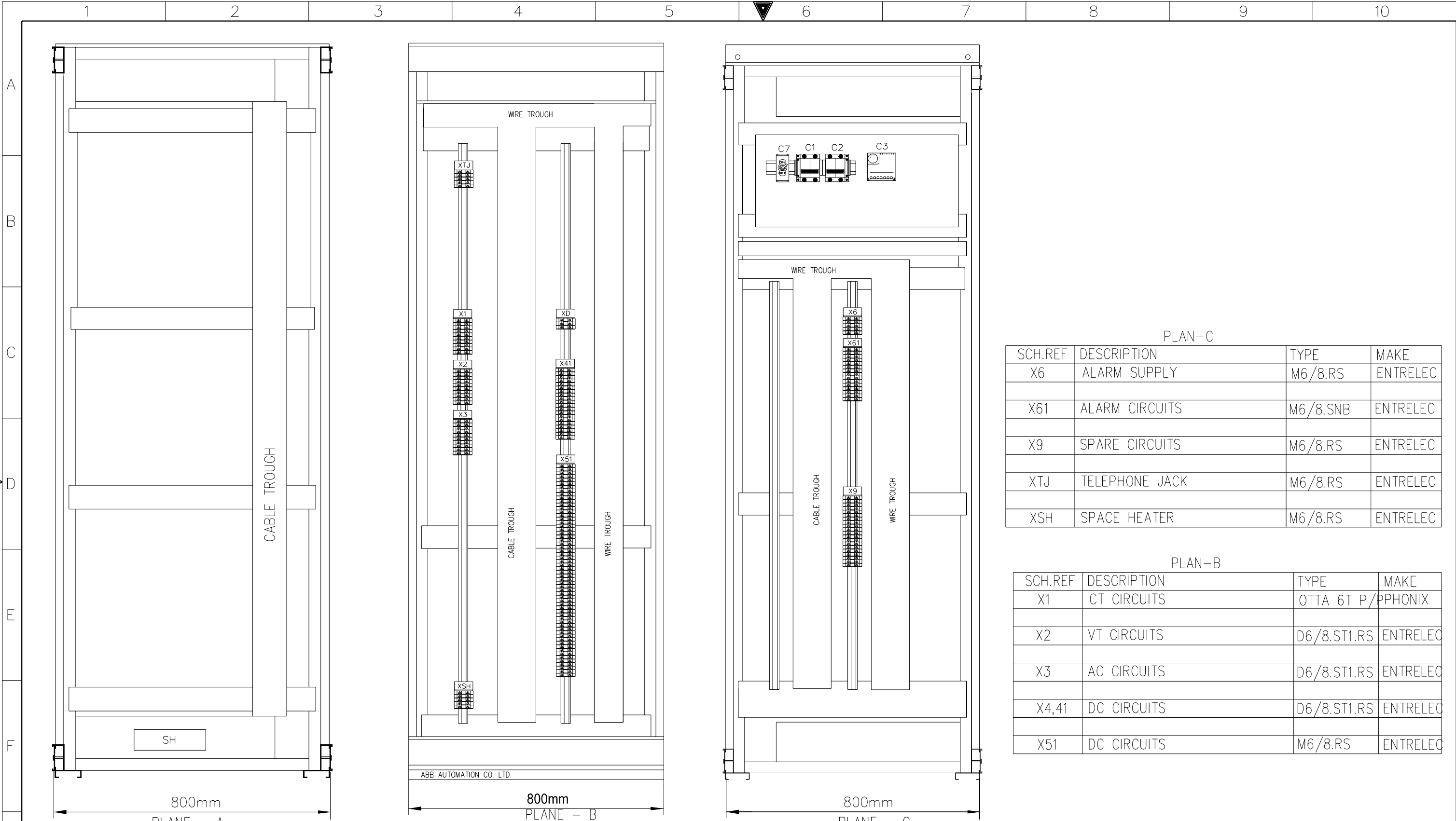
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Ø1	13 49	FACTORY ASBUILT
Ø0	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ	CHECKED BY KVR
DATE STARTED 24.01.2013	DATE COMPLETED
OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

ASSEMBLY DRAWING	
132kV UGF-8020 RELAY PANEL-1 +R02.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
-	C421	CD-322914		SHT	CONT.
				G01	G02
				Ø1	



PLAN-C			
SCH.REF	DESCRIPTION	TYPE	MAKE
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X61	ALARM CIRCUITS	M6/8.SNB	ENTRELEC
X9	SPARE CIRCUITS	M6/8.RS	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC


PLAN-B			
SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/	PPHONIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X4,41	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X51	DC CIRCUITS	M6/8.RS	ENTRELEC

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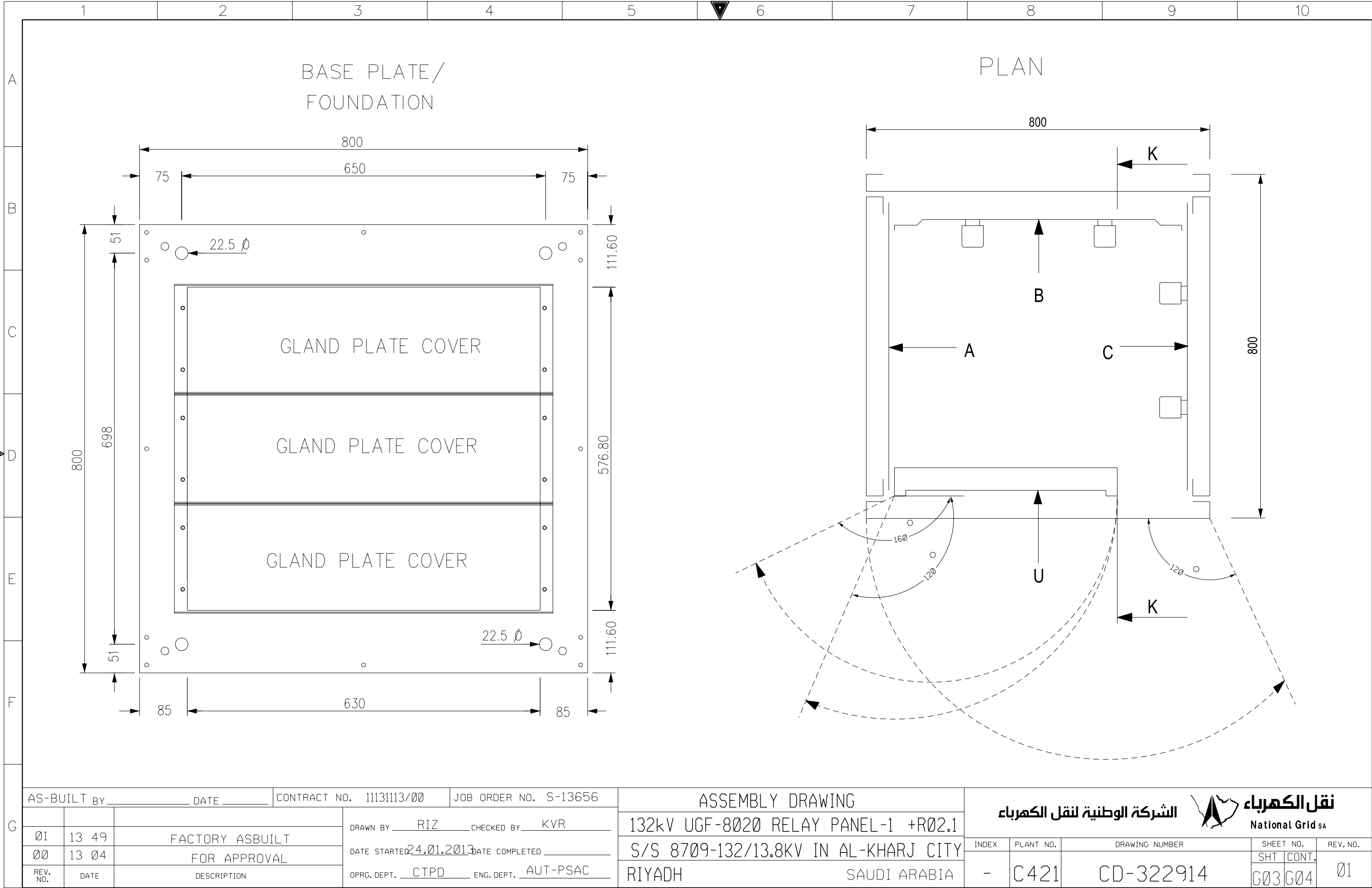
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نقل الكهرباء

National Grid sa

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			G02	G03	




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DMS

VECTOR

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A	SR. NO.	GA. REF.	SCH. REF.	D E S C R I P T I O N		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN		
				RELAY CUBICLE- +R03.1 ACCOMODATING THE FOLLOWING			1	VSH 200	ABB				
	1	U05.5001	87L-1	NUMERICAL DIFF PROTECTION TERMINAL WITH THE FOLLOWING		298	1	RED 670	ABB	1MRK 004 810-DC	SWEDEN		
				FEATURES :		298A							
				ANALOG MODULE(6I+6U)		299							
				RATED POWER SUPPLY MODULE : (90-250V)DC									
				BINARY I/P MODULE -1NO									
				BINARY O/P MODULE-1NO									
				OPTICAL ETHERNET MODULE IEC 61850-8-1/100 BASE FX CHANNEL GLASS									
				MEDIUM GRAPHIC HMI,15 CONTROLLABLE OBJECTS,1X 19"									
B	2	U12.5001	TS-1	TEST SWITCH FOR RED 670 RELAY		224	1	RTXP24	ABB	RK 926 315-AC			
	3	U16.5001	S86F1	PUSH BUTTON FOR 86CBF & 86F1 TRIP RELAY RESET PB		232	2	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN		
		U16.5002	S86CBF	BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102			
				CONTACT DATA : 1NO+1NC									
	4	U16.5003	S86B-1	PUSH BUTTON FOR 86B & LT TRIP RELAY RESET PB		232	3	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN		
		U16.5004	S86B-2	BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102			
		U16.5005	LT	CONTACT DATA : 1NO+1NC									
C													
	5	U16.5006	S01	PUSH BUTTON FOR PROTECTION IN		232	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN		
				BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102			
				CONTACT DATA : 1NO+1NC									
	6	U16.5007	S02	PUSH BUTTON FOR PROTECTION OUT		232	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN		
				BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102			
				CONTACT DATA : 1NO+1NC									
		7	U16.5008	L01	INDICATION LAMP FOR FPFM OUT		277	1	MC1-10010	ABB	1SFA 611 400 R1003		
D				LENS : WHITE				MCBH-003		1SFA 611 605 R1400	SWEDEN		
				LED RATING : 110-130V,4-6MA				KA2-2145		1SFA 616 921 R2145			
				HOLDER RATING : 130V WITH RESISTORS DIODEBLOCK									
E													
F													
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid SA</div>				
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							-	C421	CD-322914		SHT	CONT.	01
											L01	L02	

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A	SR. NO.	GA. REF.	SCH. REF.	D E S C R I P T I O N		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
	8	U25.5001	86F1	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		232	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 8NO+2NC							
B				OPERATION INDICATOR : HAND RESET FLAG							
	9	U25.5002	85R1	HIGH BURDEN TYPE SELF RESET TRIP RELAY		233	1	MVAJ101	ALSTOM	MVAJ101RA0800A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 10 NO							
C				OPERATION INDICATOR : SELF RESET FLAG							
	10	U25.5003	86CBF	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		276	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 8NO+2NC							
D				OPERATION INDICATOR : HAND RESET FLAG							
	11	U25.5004	86B-1	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		276	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 8NO+2NC							
E				OPERATION INDICATOR : HAND RESET FLAG							
	12	U25.5005	86B-2	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		277	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 8NO+2NC							
F				OPERATION INDICATOR : HAND RESET FLAG							
G											
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	13	U29.101	74R1/74IT1	DUAL COIL RELAY FOR R1 DC /74IT1 DC		232,233	2	RXSF 1	ABB	RK 271 019-AN	SWEDEN			
		U29.301	74RS/74IS	AUXILIARY VOLTAGE : 110-125VDC		277								
				CONTACT DATA : 1NO + 2NC PER COIL										
B	14	U29.107	K01M	BISTABLE RELAY		232	1	RXMVB 4	ABB	RK 251 401-AP	SWEDEN			
				AUXILIARY VOLTAGE : 125V DC										
				CONTACT DATA : 7NC+7NO										
	15	U29.119	TMR/86F1	DELAY FOR PICKUP RELAY		232	3	RXKL1	ABB	1MR 000 066-AB	SWEDEN			
C		U29.319	TMR/86B-1	AUXILIARY VOLTAGE : 24-250V DC		276								
		U29.125	TMR/86B-2	CONTACT DATA : 2C/O		277								
	16	U29.325	R1	RESISTOR UNIT FOR TCS		291	1	RXTMA1	ABB	RK 711 008-AF	SWEDEN			
				RESISTOR WATT : 6.8 K OHMS										
D														
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	17			MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT		216	5	S282UC-K6 S2-H02	ABB	GH S282 0164 R0317 GH S270 1916 R0003	GERMANY			
		U39.5001	Q1	R1± SUPPLY										
		U39.5002	Q2	IT1± SUPPLY										
		U36.5001	Q3	RS± SUPPLY										
		U36.5002	Q4	IS± SUPPLY										
B		U36.5003	Q5	TC1± SUPPLY										
	18	U39.5003	C01	CONVENIENCE OUTLET 10A, 127V AC		211	1	USM45 & USMS45	LEGRAND	74140 & 74180	FRANCE			
			C02	CONVENIENCE OUTLET 10A, 220V AC										
	19		C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS		211	2	S202P-K10 S2C-H11L	ABB	2CDS 252 001 R0427 2CDS 270 1917 R0001	SWEDEN			
	20		C3	THERMOSTAT FOR SPACE HEATER, 5-60 ° C		211	1	SK 3110	RITTAL	SK 3110				
	21	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE		211	1	EDF410	EDISON	EDF410	THIWAN			
C	22		C7	ON/OFF SWITCH FOR SPACE HEATER		211	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101	SWEDEN			
	23		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP		211	1	LS30P	ABB	1SBV 010213 R1202	SWEDEN			
	24		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY, 20W		211	1	T-4	SUNON	SP-20W				
	25		SH	SPACE HEATER, 150W, 120V, 60Hz		211	1	RICA	GRUPPO	1FZEK 006 C001	ITALY			
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A	<table><tr><th>SR. NO.</th><th>ITEM DESIGNATION</th><th>D E S C R I P T I O N</th><th>SHEET.NO.</th><th>QTY.</th><th>TYPE</th><th>MAKE</th><th>ORDERING INFORMATION</th><th>COUNTRY OF ORIGIN</th></tr><tr><td>23</td><td>X1</td><td>BOLT CONNECTING TERMINAL BLOCKS FOR DISCONNECTABLE CT CIRCUITS</td><td>301</td><td>10</td><td>OTTA 6T P/P</td><td>PHOENIX</td><td>0790462</td><td>GERMANY</td></tr><tr><td></td><td>X2</td><td>SPRING LOADED TERMINAL BLOCKS FOR DISCONNECTABLE VT CIRCUITS</td><td>301</td><td>10</td><td>D6/8.STI.RS</td><td>ENTRELEC</td><td>1SNA 115 831 R0400</td><td>FRANCE</td></tr></table>									SR. NO.	ITEM DESIGNATION	D E S C R I P T I O N	SHEET.NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN	23	X1	BOLT CONNECTING TERMINAL BLOCKS FOR DISCONNECTABLE CT CIRCUITS	301	10	OTTA 6T P/P	PHOENIX	0790462	GERMANY		X2	SPRING LOADED TERMINAL BLOCKS FOR DISCONNECTABLE VT CIRCUITS	301	10	D6/8.STI.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE																				
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C	<table><tr><td></td><td>X6</td><td>SPRING LOADED TERMINAL BLOCK FOR FOR COMMON ALARM</td><td>301</td><td>5</td><td>M6/8.RS</td><td>ENTRELEC</td><td>1SNA 115 688 R2500</td><td>FRANCE</td></tr><tr><td></td><td>X61</td><td>KNIFE TYPE TERMINAL BLOCKS FOR COMMON ALARM CIRCUITS</td><td>301</td><td>15</td><td>M6/8.SNB</td><td>ENTRELEC</td><td>1SNA 115 685 R1200</td><td>FRANCE</td></tr><tr><td></td><td>X9</td><td>SPRING LOADED TERMINAL BLOCKS FOR SPARE CIRCITS</td><td>301</td><td>20</td><td>M6/8.RS</td><td>ENTRELEC</td><td>1SNA 115 688 R2500</td><td>FRANCE</td></tr></table>										X6	SPRING LOADED TERMINAL BLOCK FOR FOR COMMON ALARM	301	5	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE		X61	KNIFE TYPE TERMINAL BLOCKS FOR COMMON ALARM CIRCUITS	301	15	M6/8.SNB	ENTRELEC	1SNA 115 685 R1200	FRANCE		X9	SPRING LOADED TERMINAL BLOCKS FOR SPARE CIRCITS	301	20	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE																				
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NG/D2-D (2012/01)

DMS VECTOR

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REV. NO.	DATE	DESCRIPTION														L06	L07		

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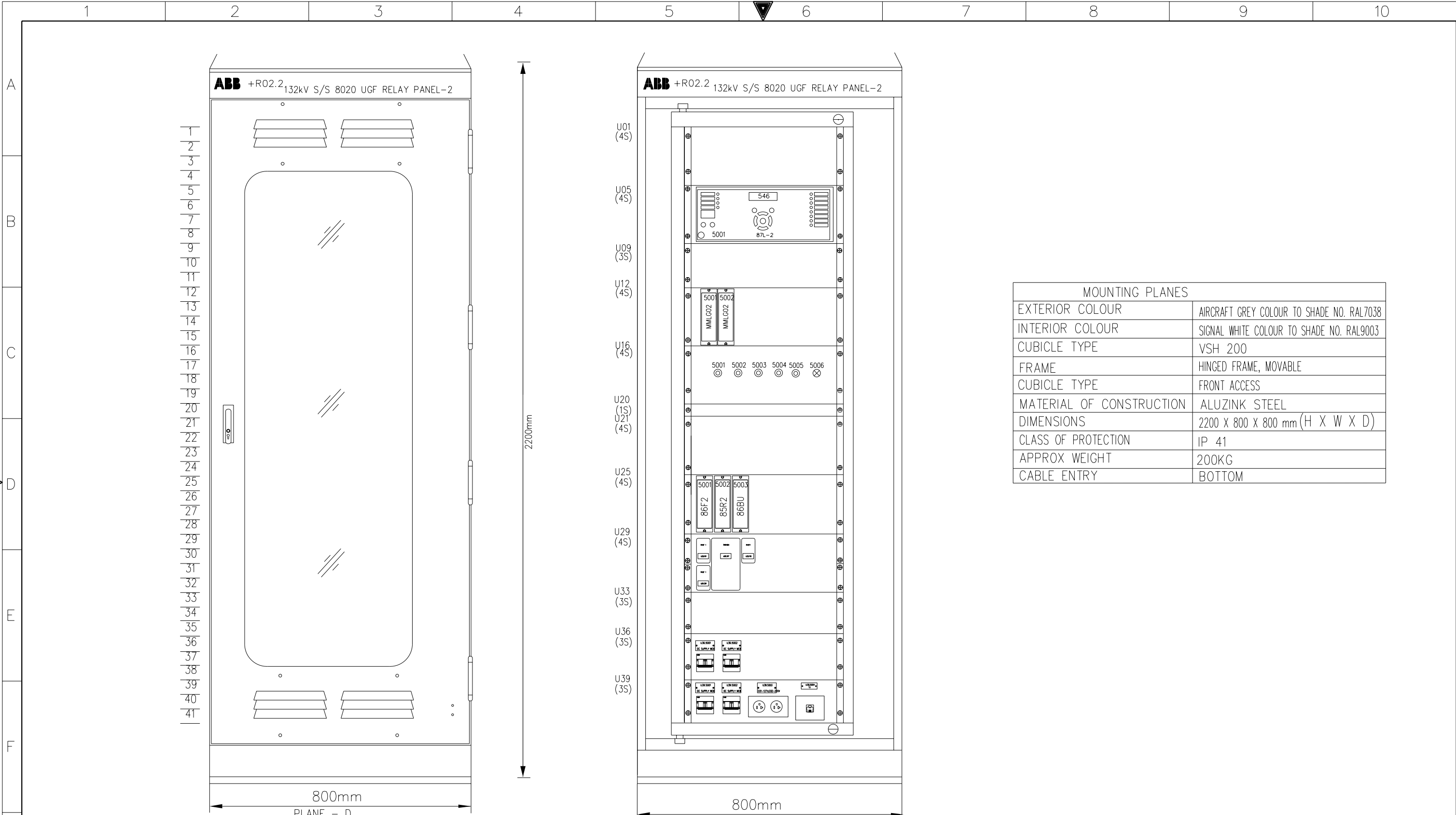
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A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																																																																					
B																																																																																																													
C	CONTRACTOR : ABB Contracting Company																																																																																																												
	CLIENT : National Gridsa																																																																																																												
D	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY																																																																																																												
	SUBSTATION : S/S 8709																																																																																																												
E	CONTRACT NO. : 11131113/00																																																																																																												
	TITLE : Assembly Drawing +R02.2 [Under Ground Feeder]																																																																																																												
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NG/D2-D (2012/01)

DMS

VECTOR

NGD200



MOUNTING PLANES	
EXTERIOR COLOUR	AIRCRAFT GREY COLOUR TO SHADE NO. RAL7038
INTERIOR COLOUR	SIGNAL WHITE COLOUR TO SHADE NO. RAL9003
CUBICLE TYPE	VSH 200
FRAME	HINGED FRAME, MOVABLE
CUBICLE TYPE	FRONT ACCESS
MATERIAL OF CONSTRUCTION	ALUZINK STEEL
DIMENSIONS	2200 X 800 X 800 mm (H X W X D)
CLASS OF PROTECTION	IP 41
APPROX WEIGHT	200KG
CABLE ENTRY	BOTTOM

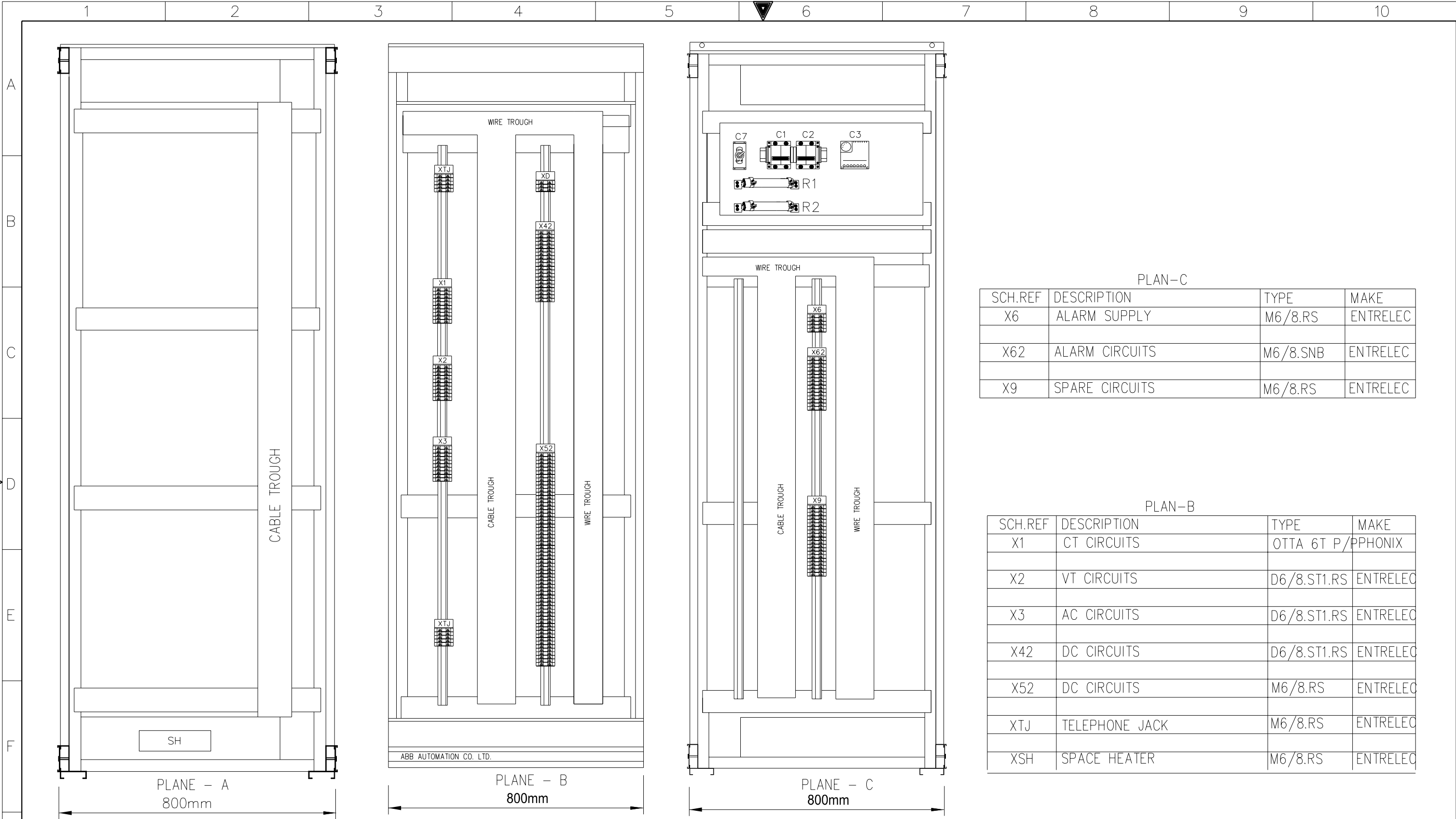
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

Ø1	13 49	FACTORY ASBUILT
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REV. NO.	DATE	DESCRIPTION

DRAWN BY	RIZ	CHECKED BY	KVR
DATE STARTED	24.01.2013	DATE COMPLETED	
OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSAC

ASSEMBLY DRAWING
132kV UGF-8020 RELAY PANEL-2 +R02.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA


الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
-	C421	CD-322915		SHT	CONT.
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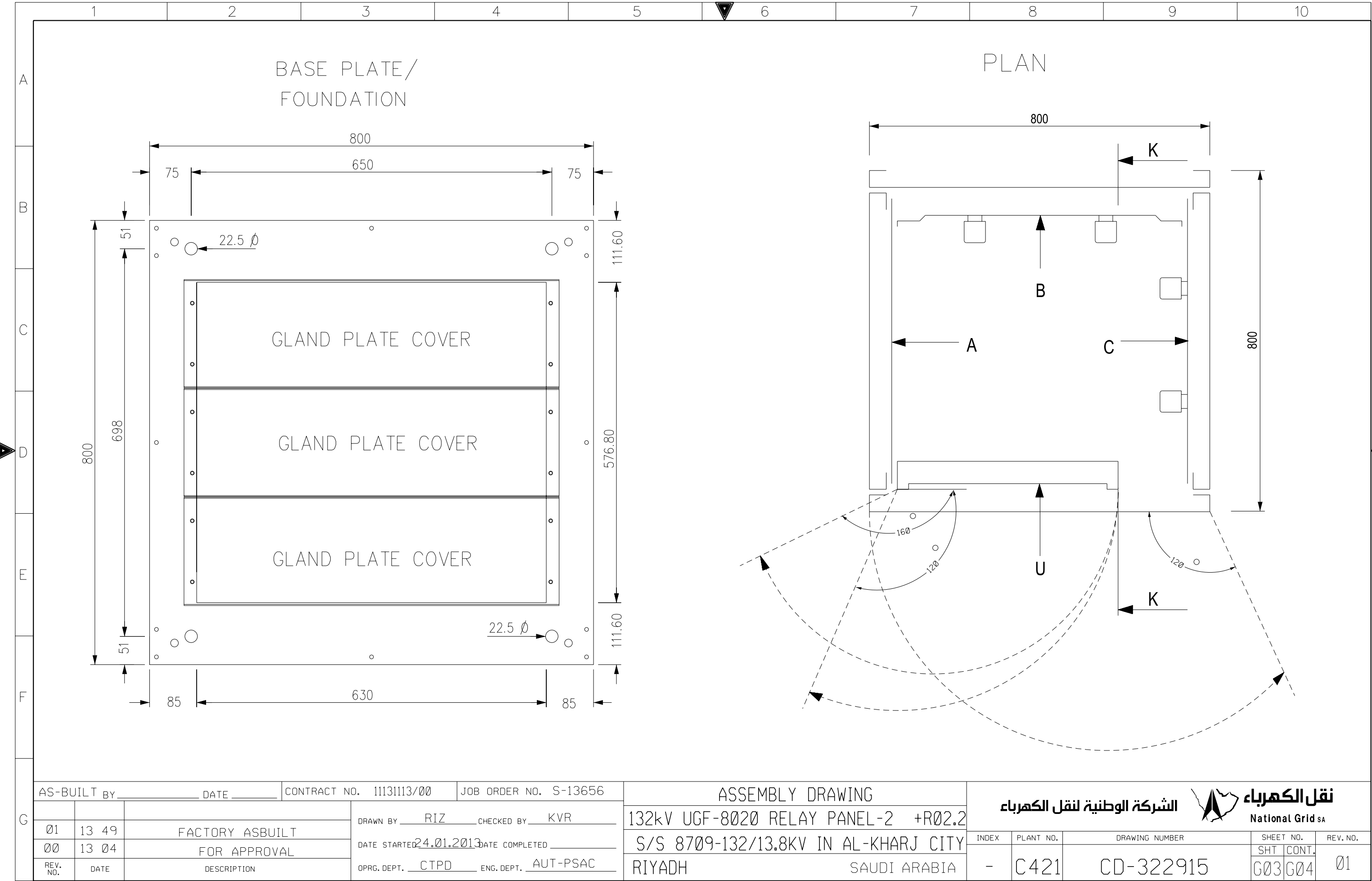


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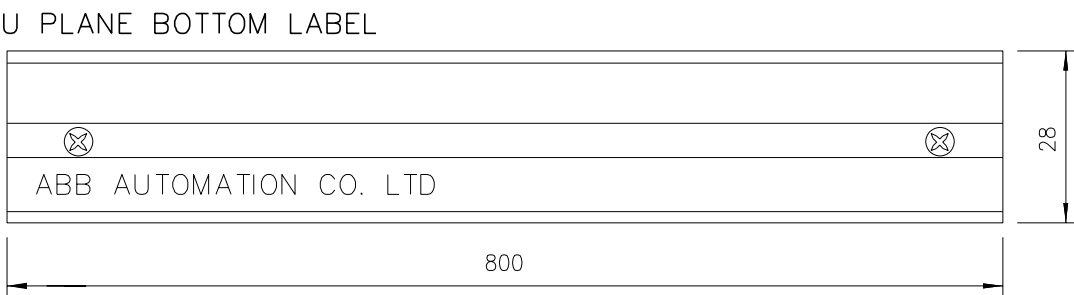
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ASSEMBLY DRAWING					
132kV UGF-8020 RELAY PANEL-2 +R02.2					
S/S 8709-132/13.8KV IN AL-KHARJ CITY					
RIYADH SAUDI ARABIA					

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
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				SHT CONT.	
				01	
				G02 G03	







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MANUFACTURING LABEL	
ABB ABB Automation Co.Ltd.	
PROJECT :	National Grid SA S/S 8709
ORDER REFERENCE :	2875 RF S13656
YEAR OF MANUFACTURE:	2013
PANEL NO. :	+R02.2
DRAWING NO. :	S13656-CD-323916
MADE IN THE KINGDOM OF SAUDI ARABIA	

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		<div><div><div>الشركة الوطنية لنقل الكهرباء</div><div><div><div><div></div></div><div>نقل الكهرباء</div><div>National Grid sa</div></div></div></div></div>					
			DRAWN BY _____ RIZ _____ CHECKED BY _____ KVR		132kV UGF-8020 RELAY PANEL-2 +R02.2									
01	13 49	FACTORY ASBUILT		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY								
00	13 04	FOR APPROVAL		OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC		RIYADH SAUDI ARABIA		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
REV. NO.	DATE	DESCRIPTION						-	C421	CD-322915		SHT CONT.		01
										G04 L00				

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A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																					
B																																																													
C	CONTRACTOR : ABB Contracting Company																																																												
	CLIENT : National Gridsa																																																												
D	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY																																																												
	SUBSTATION : S/S 8709																																																												
E	CONTRACT NO. : 11131113/00																																																												
	TITLE : LIST OF APPARATUS +R02.2 [Under Ground Feeder]																																																												
F																																																													
G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="3">COVER SHEET</td><td colspan="2"> نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa</td></tr><tr><td colspan="2">01</td><td colspan="2">13 49</td><td colspan="2">FACTORY ASBUILT</td><td colspan="2">DRAWN BY RIZ CHECKED BY KVR</td><td colspan="3">132kV UGF-8020 RELAY PANEL-2 +R02.2</td><td colspan="2"></td></tr><tr><td colspan="2">00</td><td colspan="2">13 04</td><td colspan="2">FOR APPROVAL</td><td colspan="2">DATE STARTED 24.01.2013 DATE COMPLETED _____</td><td colspan="3">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td><td colspan="2">INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.</td></tr><tr><td colspan="2">REV. NO.</td><td colspan="2">DATE</td><td colspan="2">DESCRIPTION</td><td colspan="2">OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC</td><td colspan="3">RIYADH SAUDI ARABIA</td><td colspan="2">- C421 CD-322915 L00L01 01</td></tr></table>										AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET			 نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa		01		13 49		FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8020 RELAY PANEL-2 +R02.2					00		13 04		FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY			INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.		REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			- C421 CD-322915 L00L01 01	
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NG/D2-D (2012/01)
DMS VECTOR NGD200

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A	SR. NO.	LOC. REF	SCH. REF.	D E S C R I P T I O N				SHT	QTY.	TYPE	MAKE	ORD INFORMATION		COUNRTY OF ORIGIN					
				RELAY CUBICLE– +R02.2 ACCOMODATING THE FOLLOWING					1										
	1	U05.5001	87L–2	NUMERICAL HIGH SPEED CURRENT DISTANCE PROTECTION				498	1	P546	ALSTOM	P54631NK6M0710M		UK					
				VERSION : 1 & 3 POLE TRIPPING/RECLOSING MHO/QUAD CHAR															
				AUX : 110V–250V DC : 100–120V															
				In/Vn : DUAL RATED CT (1/5A)															
				HARDWARE : EHETHER NET (100mbits) PLUS irig–b modulated															
				PRODUCT OPTION : CH1–1300nm SINGLE MODE															
				CH2–1300nm SINGLE MODE															
				PROTOCOL OPTION : IEC61850+COURIER VIA REAR RS485 PORT															
B				MOUNTING : 19” RACK,2A LOGICAL INPUTS,32 RELAY OUT PUTS															
				LANGUAGE : ENGLISH															
				SOFTWARE : 71															
C	2	U12.5001	TS–1	TEST SWITCH FOR P546 RELAY				422	2	MMLG02	ALSTOM	MMLG02 R1AA 0001E		UK					
		U12.5002	TS–2																
	3	U16.5001	S03	PUSH BUTTON FOR FPSM IN SELECTION				432	1	MP1–10B	ABB	1SFA 611 100 R1006		SWEDEN					
				BUTTON COLOUR : BLACK						MCBH–20		1SFA 611 605 R1102							
D				CONTACT DATA : 1NO + 1NC															
	4	U16.5002	S04	PUSH BUTTON FOR FPSM OUT SELECTION				432	1	MP1–10B	ABB	1SFA 611 100 R1006		SWEDEN					
				BUTTON COLOUR : BLACK						MCBH–20		1SFA 611 605 R1102							
				CONTACT DATA : 1NO + 1NC															
	5	U16.5003	S86BU	PUSH BUTTON FOR 86BU RESET				443	1	MP1–10B	ABB	1SFA 611 100 R1006		SWEDEN					
				BUTTON COLOUR : BLACK						MCBH–20		1SFA 611 605 R1102							
				CONTACT DATA : 1NO + 1NC															
E	6	U16.5004	S86F2	PUSH BUTTON FOR 86F2 RESET				432	1	MP1–10B	ABB	1SFA 611 100 R1006		SWEDEN					
				BUTTON COLOUR : BLACK						MCBH–20		1SFA 611 605 R1102							
				CONTACT DATA : 1NO + 1NC															
F	7	U16.5005	LT	PUSH BUTTON FOR 86F2 RESET				431	1	MP1–10B	ABB	1SFA 611 100 R1006		SWEDEN					
				BUTTON COLOUR : BLACK						MCBH–20		1SFA 611 605 R1102							
				CONTACT DATA : 1NO + 1NC															
	8	U16.5006	L01	INDICATION LAMP OUT				431	1	MC1–100W	ABB	1SFA 611 400 R1003		SWEDEN					
G				LENS : WHITE						MCBH–003		1SFA 611 605 R1400							
				LENS RATING 110–130V,4–6MA						KA2–2145		1SFA 616 921 R2145							
				HOLDER RATING :130V WITH RESISTORS DIODE BLOCK															
G	AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00			JOB ORDER NO. S-13656			COVER SHEET				الشركة الوطنية لنقل الكهرباء National Grid sa					
				DRAWN BY RIZ CHECKED BY KVR			132kV UGF-8020 RELAY PANEL-2 +R02.2				INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.		
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C	SR. NO.	LOC. REF	SCH. REF.	D E S C R I P T I O N		SHT	QTY.	TYPE	MAKE	ORD INFORMATION	COUNRTY OF ORIGIN		
				RELAY CUBICLE- +R02.2 ACCOMODATING THE FOLLOWING									
	12	U29.101	74R2/74R3	DUAL COIL RELAY FOR + R2/R3 DC SUPERVISION		432,443	2	RXSF 1	ABB	RK 271 019-AN	SWEDEN		
		U29.119	74IT2	AUXILIARY VOLTAGE : 110-125VDC		433							
D				CONTACT DATA : 1NO + 2NC PER COIL									
	13	U29.107	K01S	BISTABLE RELAY FOR "IN/OUT SELECTION"		432	1	RXMVB4	ABB	1MRK 251 401 AP	SWEDEN		
				AUXILIARY VOLTAGE : 110 - 125V DC									
				OUTPUT CONTACTS : 7NO + 7NC									
E	14	U29.301	TMR/86F2	DELAY ON PICKUP DELAY FOR RESET 86F2		432	1	RXKL1	ABB	1MRK 000-066-AB	SWEDEN		
				AUXILIARY VOLTAGE : 110-125VDC									
				CONTACT DATA : 2 C/O									
				TIMER RANGE : 20MS-99 hrs									
F													
G													
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>					
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DMS

VECTOR

NG/D2-D (2012/01)
NGD200

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B	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N		SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
	15			MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT		416	4	S 282 UC-K6 S2-H02	ABB	GH S282 0164 R0377 GH S270 1916 R0003	GERMANY
		U39.5001	Q1	Q1 R2± SUPPLY							
		U39.5002	Q2	Q2 R3 ± SUPPLY							
		U36.5001	Q3	Q3 IT2+ SUPPLY							
C		U36.5002	Q4	Q4 TC2 + SUPPLY							
	16	U39.5003	C01	CONVENIENCE OUTLET 10A, 127V AC		411	1	USM45 & USMS45	LEGRAND	74140 & 74180	FRANCE
			C02	CONVENIENCE OUTLET 10A, 220V AC							
			C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS		411	2	S202P-K10 S2C-H11L	ABB	2CDS 253 001 R0104 2CDS 200 936 R0001	GERMANY
	17		C3	THERMOSTAT FOR SPACE HEATER, 5-60° C		411	1	SK 3110	RITTAL	SK 3110	THIWAN
D	18	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE		411	1	EDF410	EDISON	EDF410	SWEDEN
	19		C7	ON/OFF SWITCH FOR SPACE HEATER		411	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101	
	20		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP		411	1	LS30PKB1302	ABB	1SBV 010213 R1202	SWEDEN
	21		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY, 20W		411	1	T-4	SUNON	SP-20W	
	22		SH	SPACE HEATER, 150W, 120V, 60Hz		411	1	RICA	GRUPPO	1FZEK 006 C001	ITALY
E	23		R1	FIXED RESISTOR FOR TRIP CIRCUIT SUPERVISION CKT.		491	2	GRF 30/200	DANOTHERM	GRF 30/200	GERMANY
			R2	2.5Kohm,15W							
F											
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa		
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NG/D2-D (2012/01)

DMS VECTOR

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SR. NO.	ITEM DESIGNATION	D E S C R I P T I O N	SHEET.NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
24	X1	BOLT CONNECTING TERMINAL BLOCKS FOR DISCONNECTABLE CT CIRCUITS	501	10	OTTA 6T P/P	PHOENIX	0790462	GERMANY
	X2	SPRING LOADED TERMINAL BLOCKS FOR DISCONNECTABLE VT CIRCUITS	501	5	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
	X3	SPRING LOADED TERMINAL BLOCKS FOR DISCONNECTABLE AC CIRCUITS	501	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
	X42	SPRING LOADED TERMINAL BLOCK FOR DISCONNECTABLE DC CIRCUITS	501	50	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
	X52	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS	501	50	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	X62,X6	KNIFE TYPE TERMINAL BLOCKS FOR COMMON ALARM CIRCUITS	501	15,5	M6/8.SNB	ENTRELEC	1SNA 115 685 R1200	FRANCE
	X9	SPRING LOADED TERMINAL BLOCKS FOR SPARE CIRCITS	501	15	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	XTJ	SPRING LOADED TERMINAL BLOCKS FOR TELEPHONE JACK	501	5	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	XSH	SPRING LOADED TERMINAL BLOCKS FOR SPACE HEATER	501	3	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	XD	TERMINAL BLOCKS WITH BLOCKING DIODE	501	3	M4/6.S IN5408 V150ZA1	ENTRELEC MEJDAF RS	11521310 02-049 239-270	FRANCE
	X6	SPRING LOADED TERMINAL BLOCKS FOR ALARM CIRCITS	501	5	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE

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NG/D2-D (2012/01)
DMS VECTOR NGD200

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C	CONTRACTOR : ABB Contracting Company																																																																
	CLIENT : National Gridsa																																																																
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CONTENTS		ABB SHT.NO.	REV.00	REV.01	REV.02
COVER SHEET		000	X	X	
CONTENTS SHEET		001	X	X	
CONTENTS SHEET		002	X	X	
GRAPHICAL SYMBOLS FOR DIAGRAMS		011	X	X	
GRAPHICAL SYMBOLS FOR DIAGRAMS		012	X	X	
COMMON LEGEND		013	X	X	
FERULE AND WIRING DETAILS		014	X	X	
DRAWING REFERENCE		015	X	X	
DRAWING REFERENCE		016	X	X	
PRIMARY SYSTEM		051-052	X	X	
AC SUPPLY FOR ILLUMINATION & POWER SOCKET		211	X	X	
AC MCB AUX CONTACTS		212	X	X	
DC SUPPLY DISTRIBUTION		216	X	X	
CURRENT TRANSFORMER INPUTS -87L-1		221	X	X	
VOLTAGE TRANSFORMER INPUTS - 87L-1		222	X	X	
COMMUNICATION CIRCUITS		223	X	X	
MAIN-1 PROT. 87L-1 RELAY - BINARY INPUTS		231	X	X	
MAIN-1 CABLE DIFFL. PROTECTION TRIP RELAY CKT.		232	X	X	
MAIN-1 INTER TRIP RELAY CKT.		233	X	X	
COMMUNICATION INTERFACE		246	X	X	
CBF-1/2 & BUSBAR PROTN-1 TRIP RELAY CIRCUIT		276	X	X	
BUSBAR PROTN-2 TRIP RELAY CIRCUIT		277	X	X	
MAIN-1 INDICATION CIRCUIT		278	X	X	
TRIP COIL-1 SUPERVISION CIRCUIT		291	X	X	
TRIP COIL-2/DELAYTRIP/CBF INITIATION CONTACTS		292	X	X	

CONTENTS		ABB SHT.NO.	REV.00	REV.01	REV.02
CLOSE BLOCK CIRCUIT		293	X	X	
COMMON ALARM CIRCUITS		294	X	X	
SPARE CONTACTS		295	X	X	
BLOCK REFERENCE (TRM MODULE)		298	X	X	
BLOCK REFERENCE (BI)		299	X	X	
BLOCK REFERENCE (BO)		300	X	X	
TERMINAL BLOCKS PANEL +R02.1		301	X	X	




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REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC								001	002	

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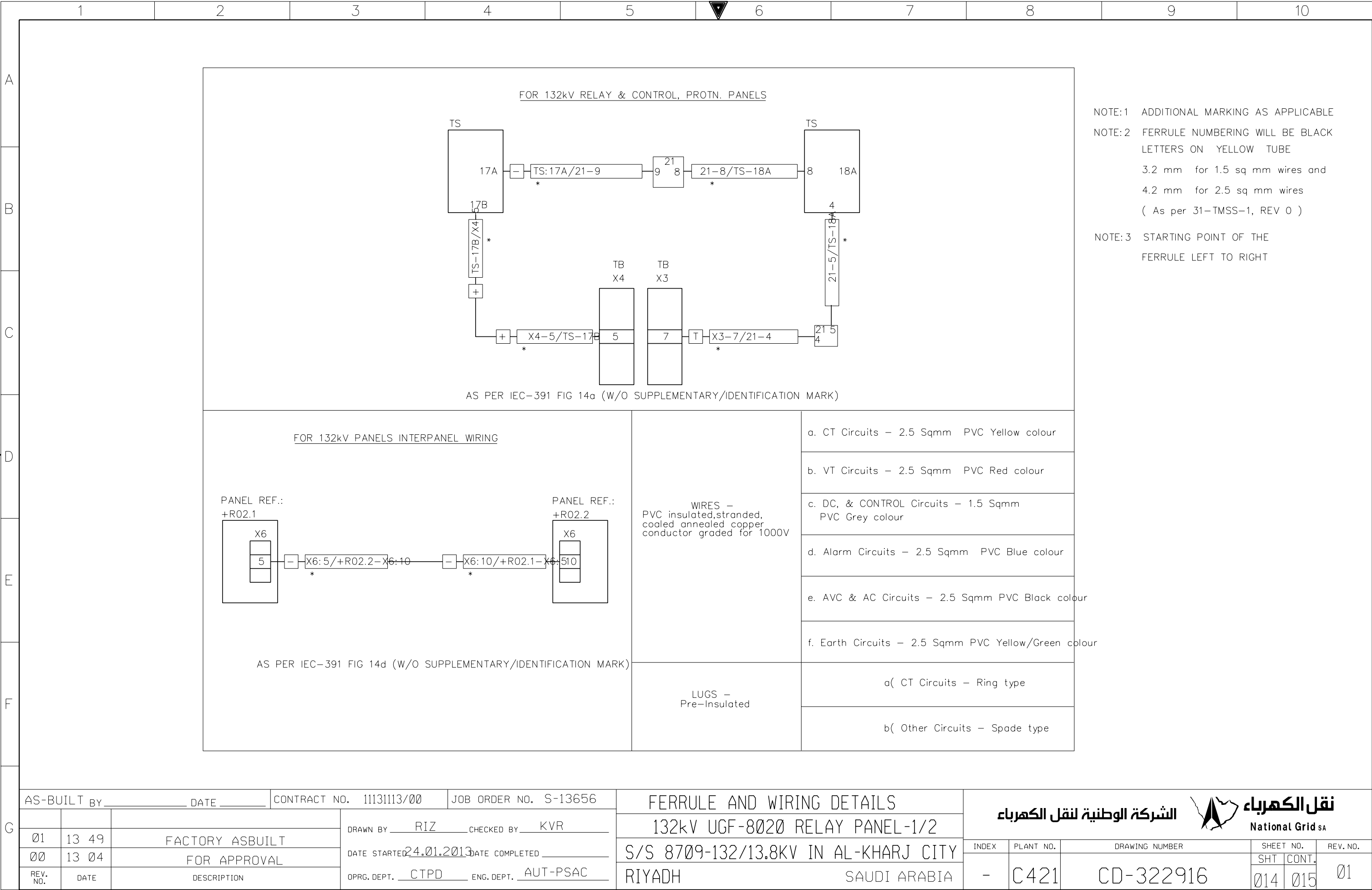
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A	<div><div>ABB</div><div>PROTECTION & SUBSTATION AUTOMATION</div></div> <table><thead><tr><th>MANUFACTURER</th><th>SCHEMATICS DWG.NO</th><th>PANEL DESCRIPTION</th><th>PANEL REFERENCE</th></tr></thead><tbody><tr><td rowspan="20">ABB</td><td></td><td>SS 8709 132kV RELAY PANELS</td><td></td></tr><tr><td rowspan="2">CD-322928</td><td>132/13.8kV GT-1 RELAY PANEL -1</td><td>+R05.1</td></tr><tr><td>132/13.8kV GT-1 RELAY PANEL -2</td><td>+R05.2</td></tr><tr><td rowspan="2">CD-322931</td><td>132/13.8kV GT-2 RELAY PANEL -1</td><td>+R02.1</td></tr><tr><td>132/13.8kV GT-2 RELAY PANEL -2</td><td>+R02.2</td></tr><tr><td rowspan="2">CD-322934</td><td>132/13.8kV GT-3 RELAY PANEL -1</td><td>+R04.1</td></tr><tr><td>132/13.8kV GT-3 RELAY PANEL -2</td><td>+R04.2</td></tr><tr><td>CD-322936</td><td>132/13.8kV TRANSFORMER-1,2& 3 AVC PANEL</td><td>+AVC</td></tr><tr><td rowspan="2">CD-322922</td><td>132KV SPARE-1 UGF RELAY PANEL -1</td><td>+R07.1</td></tr><tr><td>132KV SPARE-1 UGF RELAY PANEL -2</td><td>+R07.2</td></tr><tr><td rowspan="2">CD-322916</td><td>132KV 8020 UGF RELAY PANEL -1</td><td>+R02.1</td></tr><tr><td>132KV 8020 UGF RELAY PANEL -2</td><td>+R02.2</td></tr><tr><td rowspan="2">CD-322916</td><td>132KV 8020 UGF RELAY PANEL -1</td><td>+R02.1</td></tr><tr><td>132KV 8020 UGF RELAY PANEL -2</td><td>+R02.2</td></tr><tr><td rowspan="2">CD-322925</td><td>132KV SPARE-2 UGF RELAY PANEL -1</td><td>+R06.1</td></tr><tr><td>132KV SPARE-2 UGF RELAY PANEL -2</td><td>+R06.2</td></tr><tr><td>CD-323012</td><td>132KV FOIP PANEL</td><td>+FOIP</td></tr><tr><td>CD-322946</td><td>132kV BUS COUPLER-A</td><td>+R130</td></tr><tr><td>CD-322948</td><td>132kV BUS COUPLER-B</td><td>+R230</td></tr><tr><td>CD-322950</td><td>132kV BUS SECTION</td><td>+R120</td></tr><tr><td>CD-322991</td><td>132kV BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL</td><td>+BB1-1</td></tr><tr><td>CD-322993</td><td>132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL</td><td>+BB1-2</td></tr><tr><td>CD-322995</td><td>132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL</td><td>+BB1-3</td></tr><tr><td>CD-322997</td><td>132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL</td><td>+BB1-4</td></tr><tr><td>CD-322999</td><td>132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL</td><td>+BB1-5</td></tr><tr><td>CD-323001</td><td>132kV BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL</td><td>+BB2-1</td></tr><tr><td>CD-323003</td><td>132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL</td><td>+BB2-2</td></tr><tr><td>CD-323005</td><td>132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL</td><td>+BB2-3</td></tr><tr><td>CD-323007</td><td>132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL</td><td>+BB2-4</td></tr><tr><td>CD-323009</td><td>132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL</td><td>+BB2-5</td></tr></tbody></table>										MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE	ABB		SS 8709 132kV RELAY PANELS		CD-322928	132/13.8kV GT-1 RELAY PANEL -1	+R05.1	132/13.8kV GT-1 RELAY PANEL -2	+R05.2	CD-322931	132/13.8kV GT-2 RELAY PANEL -1	+R02.1	132/13.8kV GT-2 RELAY PANEL -2	+R02.2	CD-322934	132/13.8kV GT-3 RELAY PANEL -1	+R04.1	132/13.8kV GT-3 RELAY PANEL -2	+R04.2	CD-322936	132/13.8kV TRANSFORMER-1,2& 3 AVC PANEL	+AVC	CD-322922	132KV SPARE-1 UGF RELAY PANEL -1	+R07.1	132KV SPARE-1 UGF RELAY PANEL -2	+R07.2	CD-322916	132KV 8020 UGF RELAY PANEL -1	+R02.1	132KV 8020 UGF RELAY PANEL -2	+R02.2	CD-322916	132KV 8020 UGF RELAY PANEL -1	+R02.1	132KV 8020 UGF RELAY PANEL -2	+R02.2	CD-322925	132KV SPARE-2 UGF RELAY PANEL -1	+R06.1	132KV SPARE-2 UGF RELAY PANEL -2	+R06.2	CD-323012	132KV FOIP PANEL	+FOIP	CD-322946	132kV BUS COUPLER-A	+R130	CD-322948	132kV BUS COUPLER-B	+R230	CD-322950	132kV BUS SECTION	+R120	CD-322991	132kV BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL	+BB1-1	CD-322993	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-2	CD-322995	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-3	CD-322997	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-4	CD-322999	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-5	CD-323001	132kV BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL	+BB2-1	CD-323003	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-2	CD-323005	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-3	CD-323007	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-4	CD-323009	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-5
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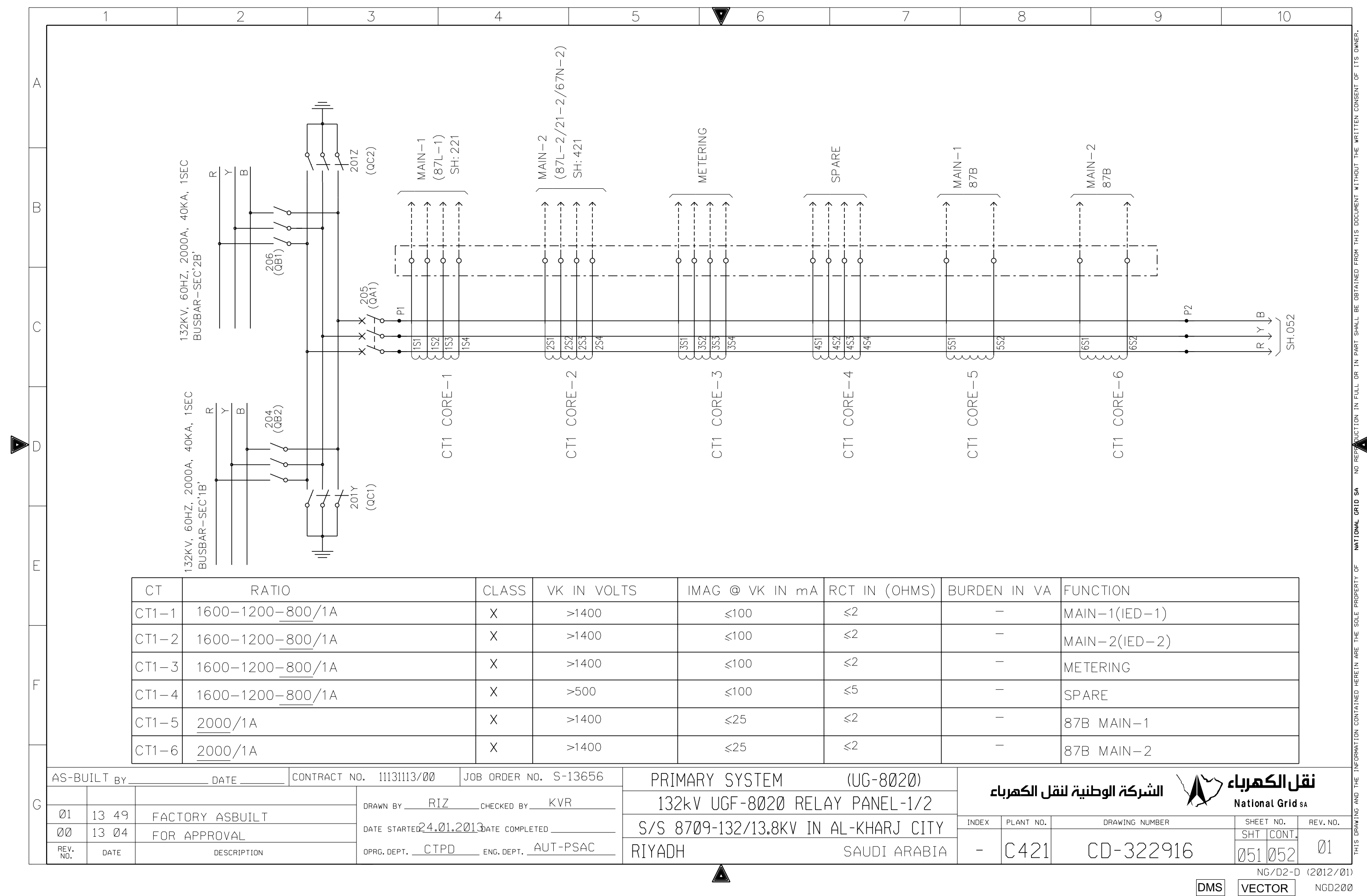
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PROTECTION & SUBSTATION
AUTOMATION

S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

CD-322916



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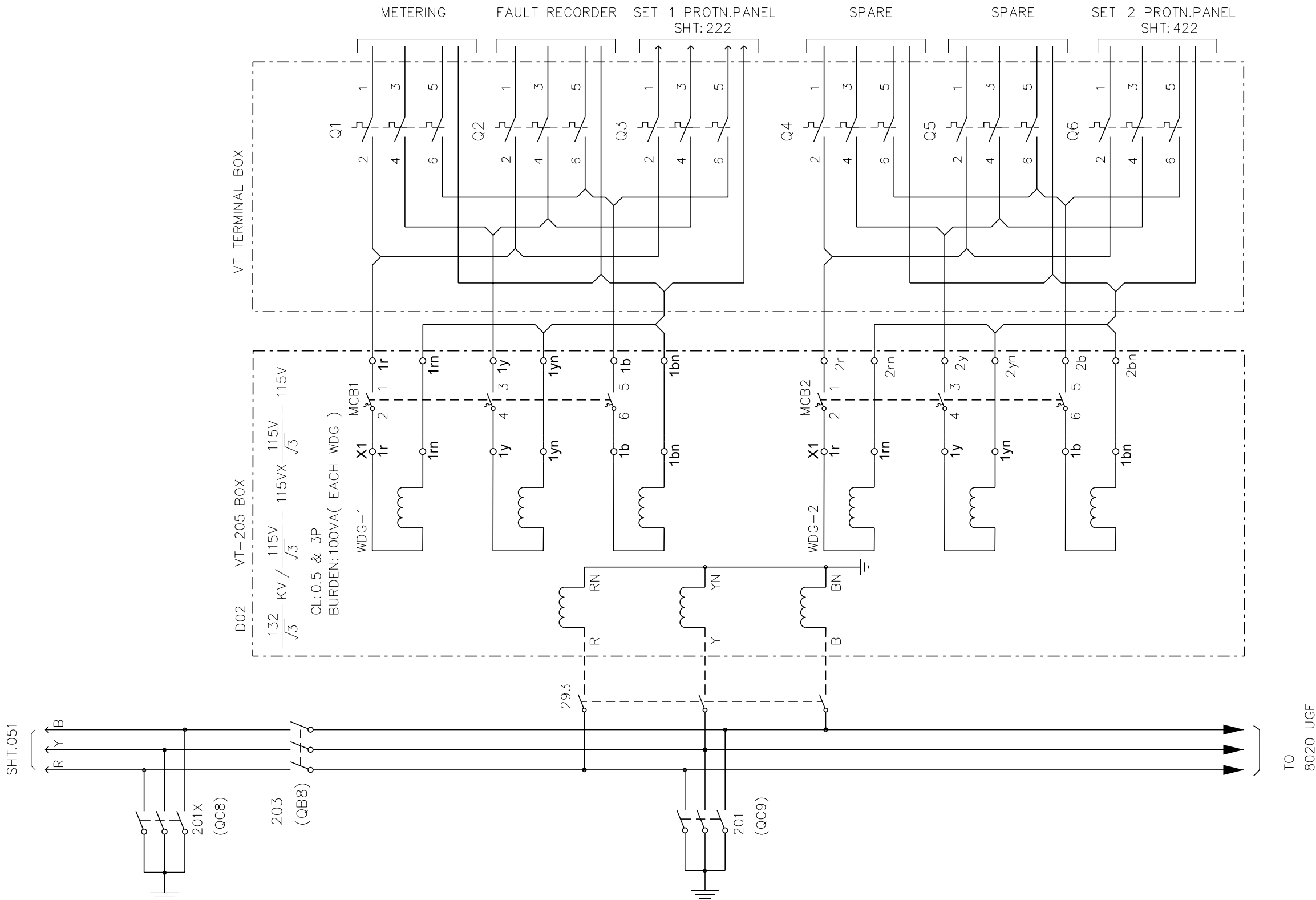
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AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

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ØØ	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC _____

PRIMARY SYSTEM (UG-8020)

132kV UGF-8020 RELAY PANEL-1/2

S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



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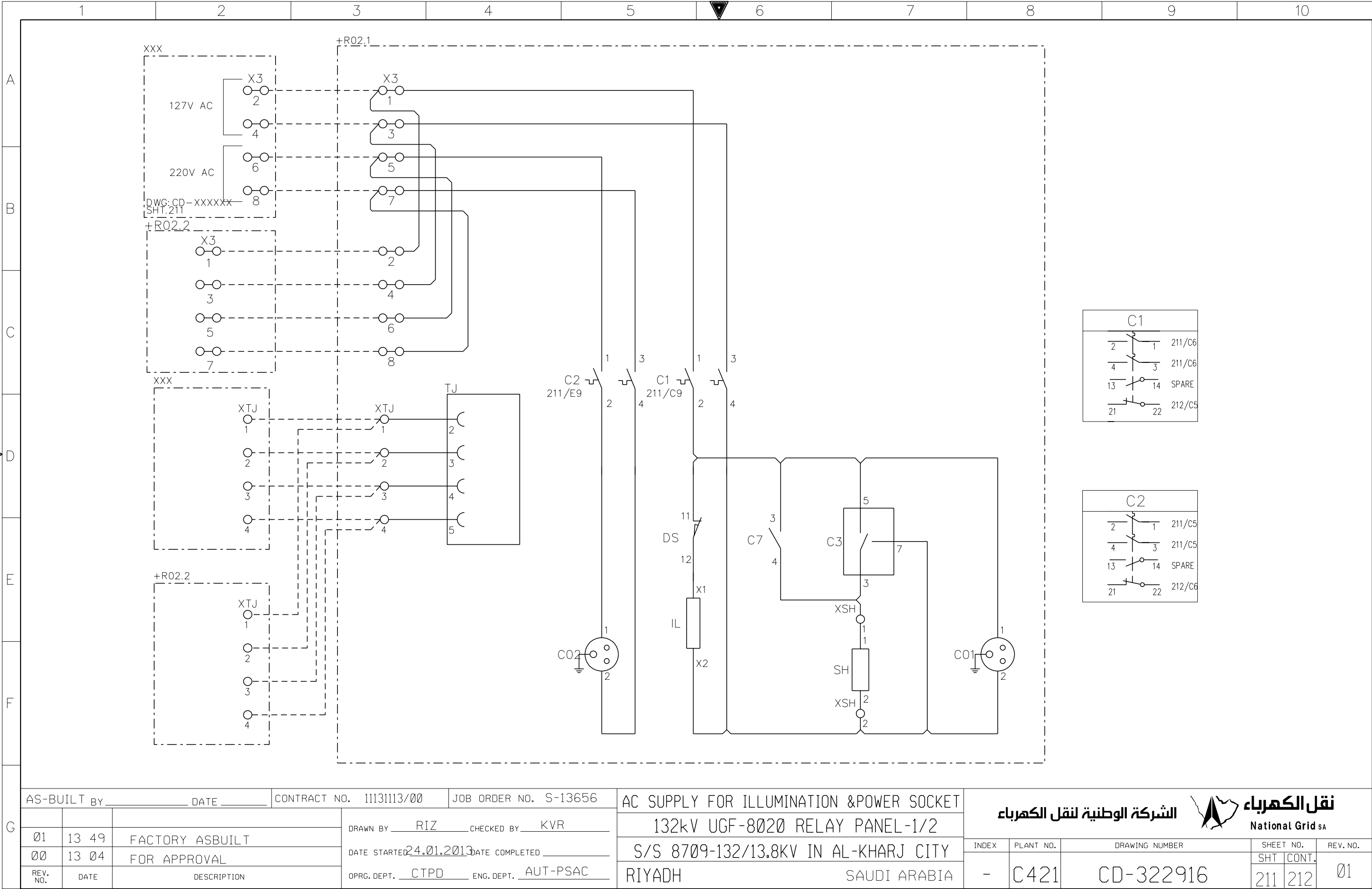
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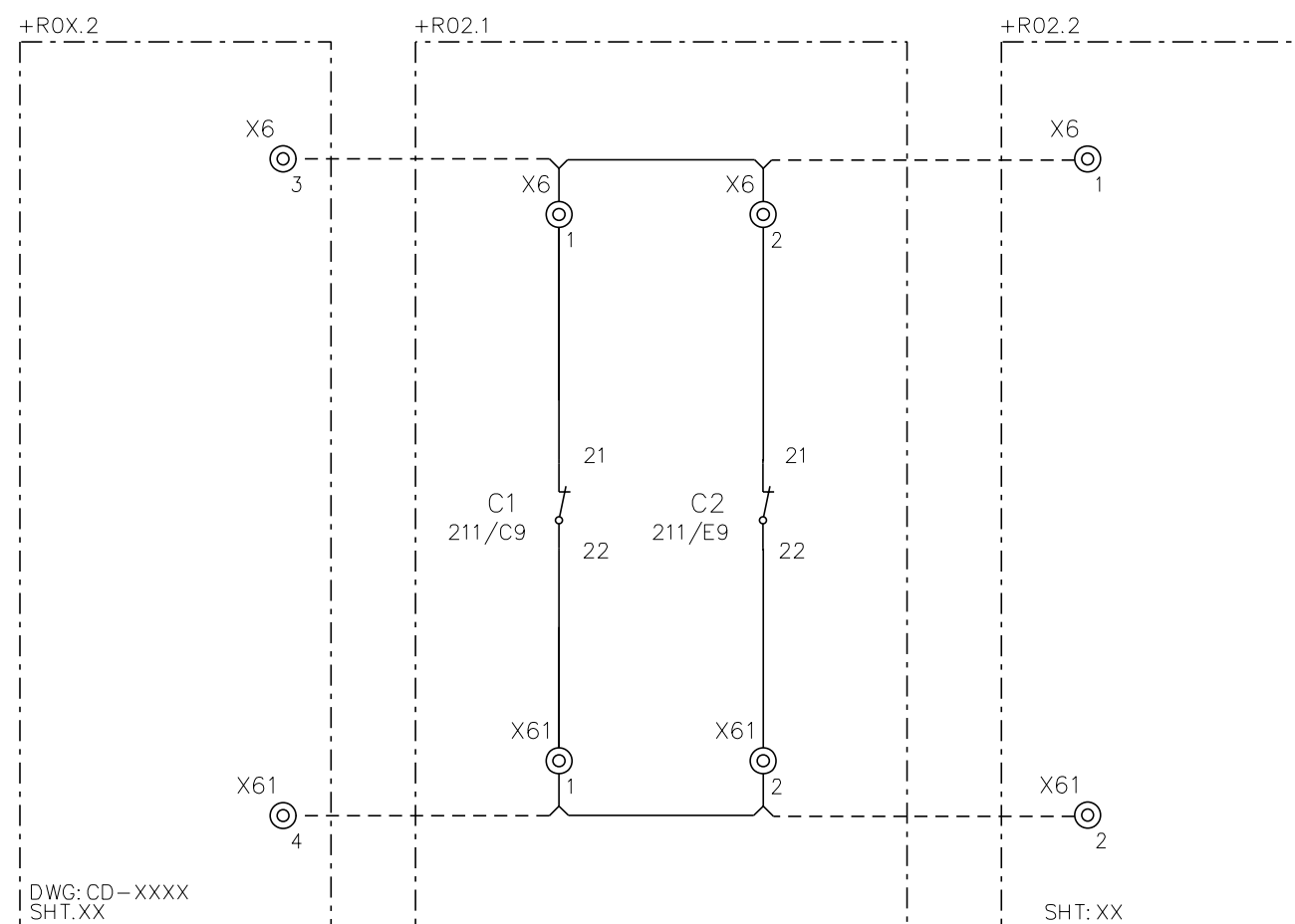
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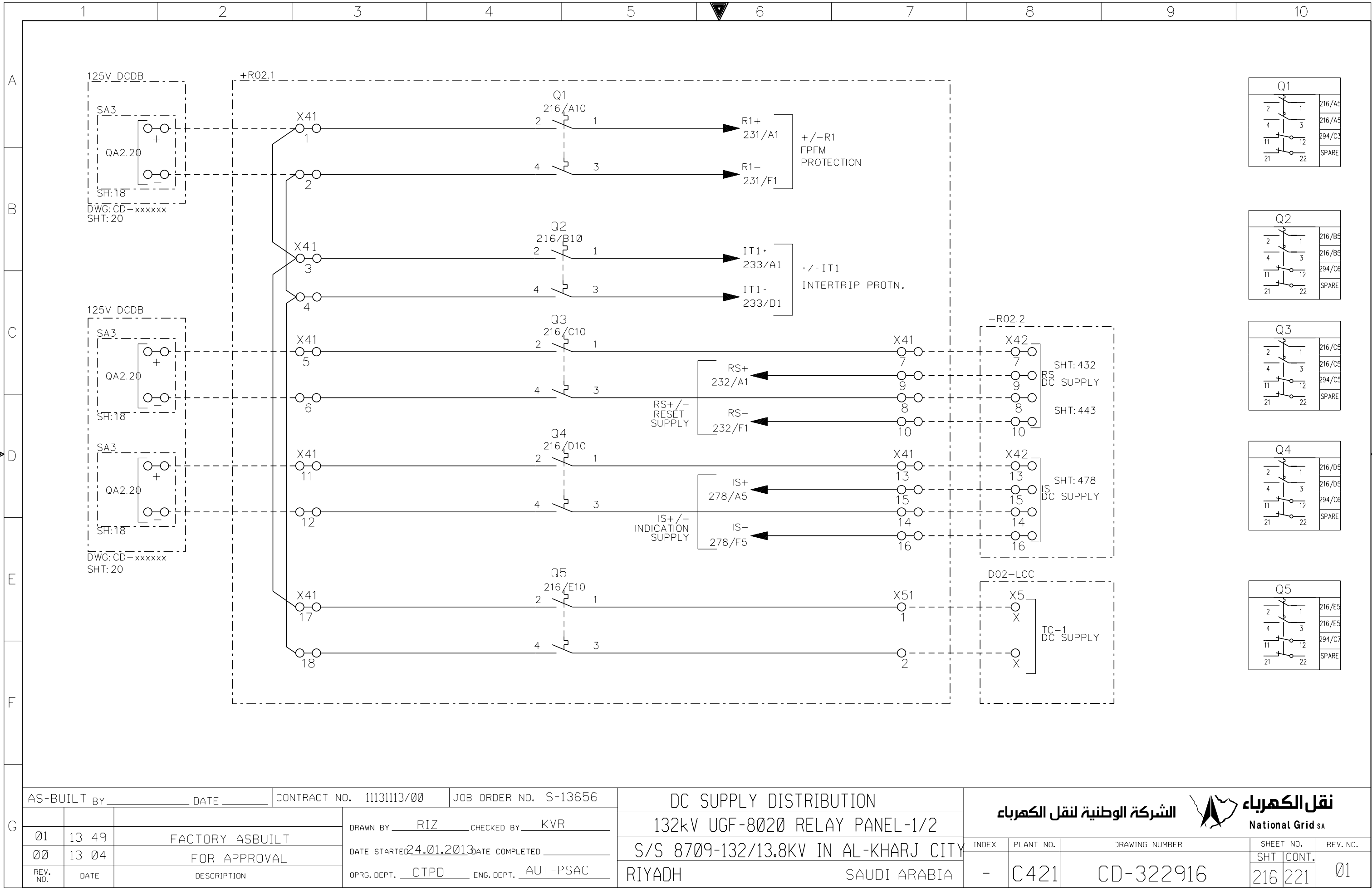
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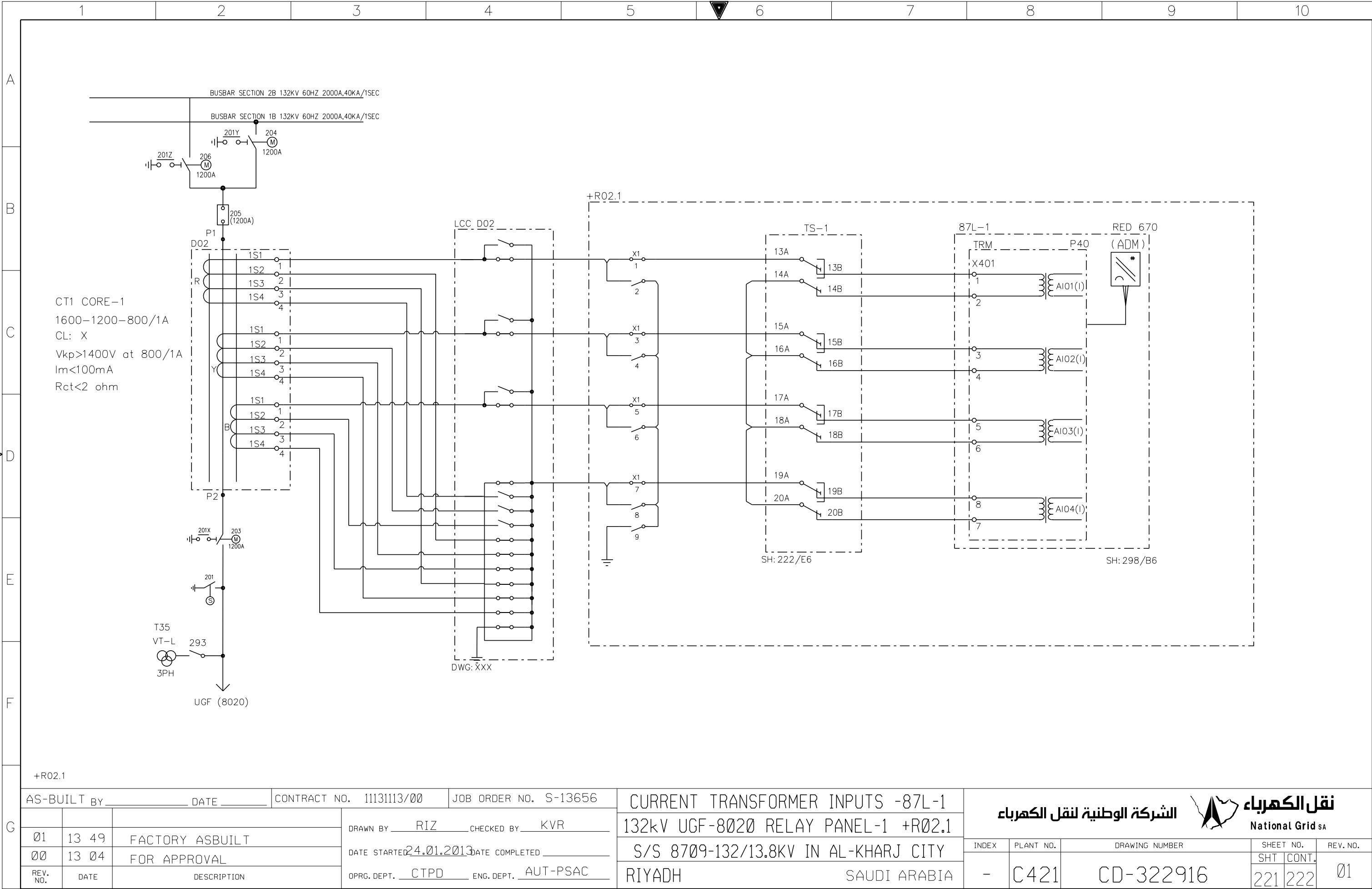
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REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>	

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S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

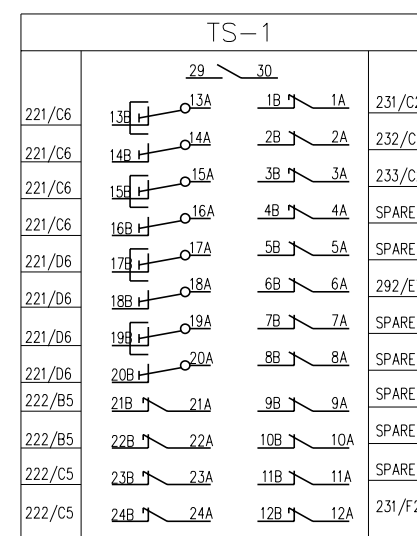
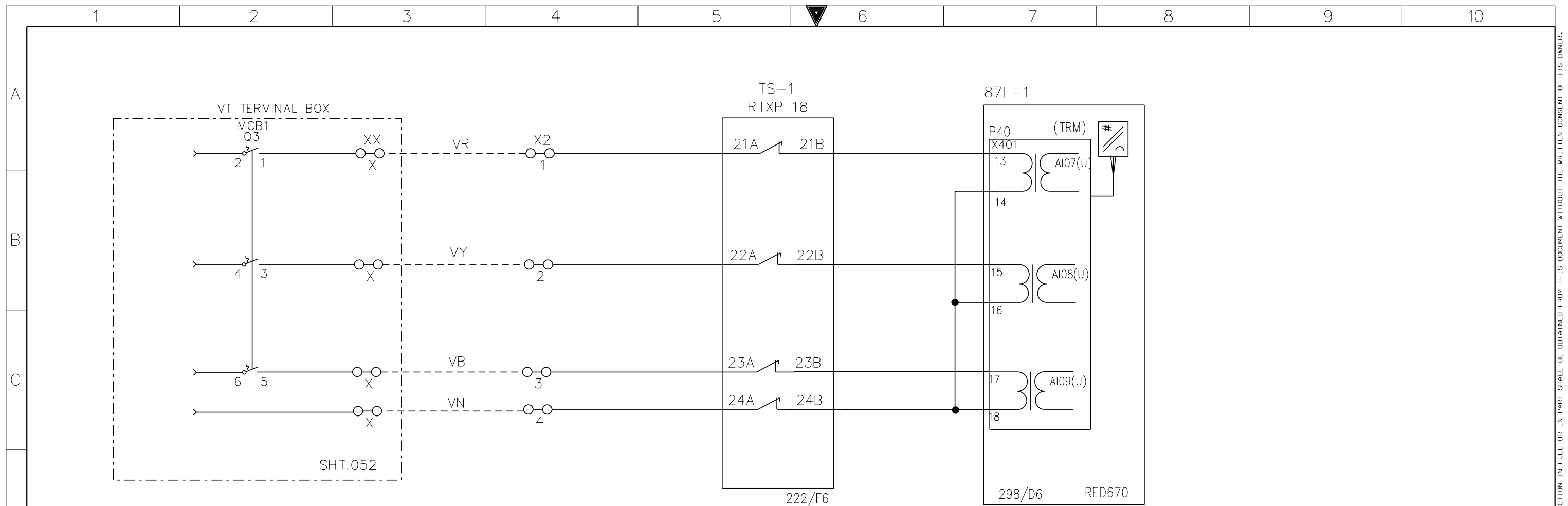
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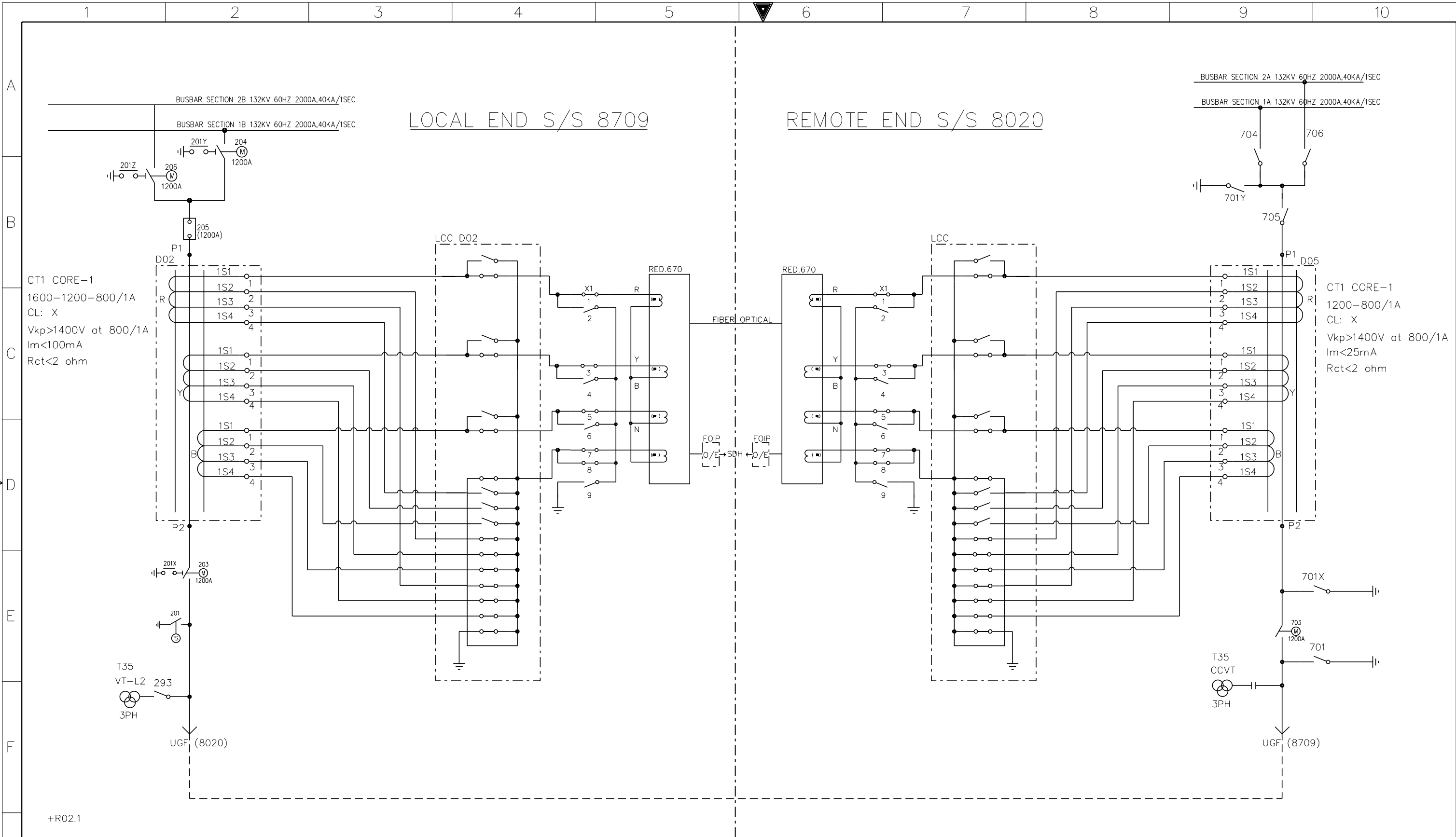



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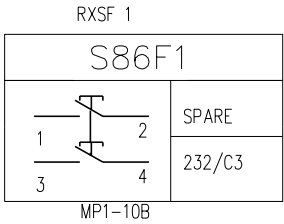
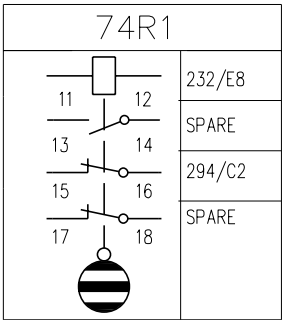
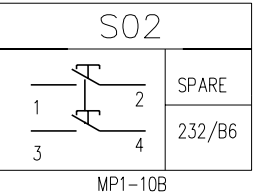
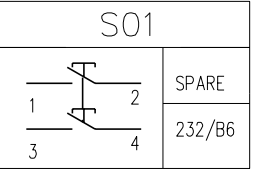
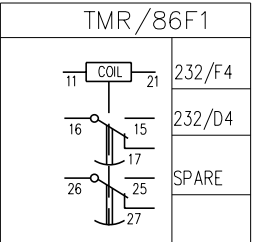
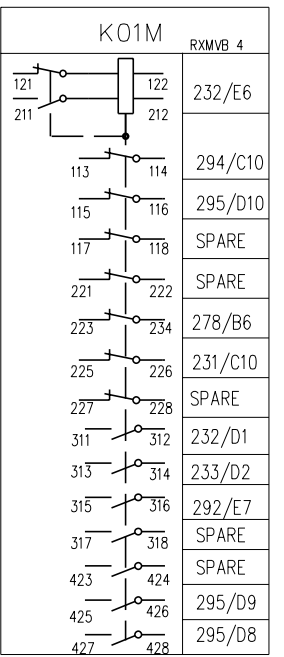
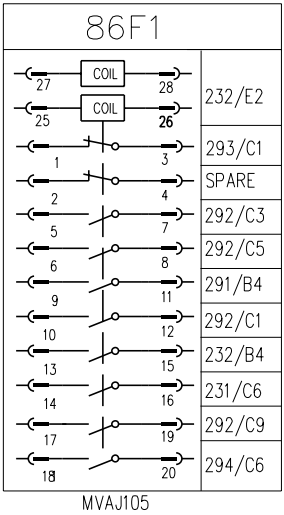
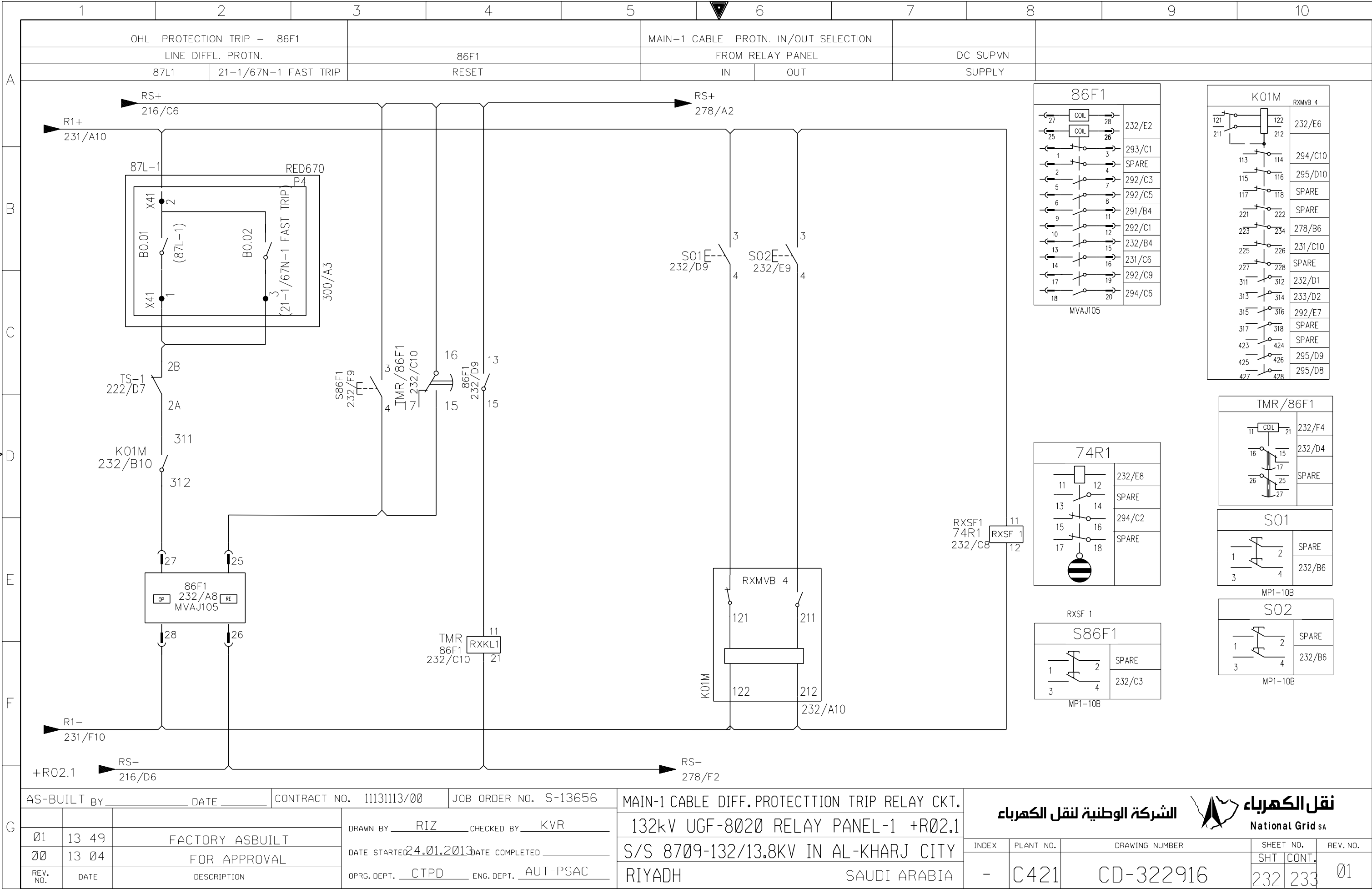


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	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-		C421	CD-322916		222		223	01



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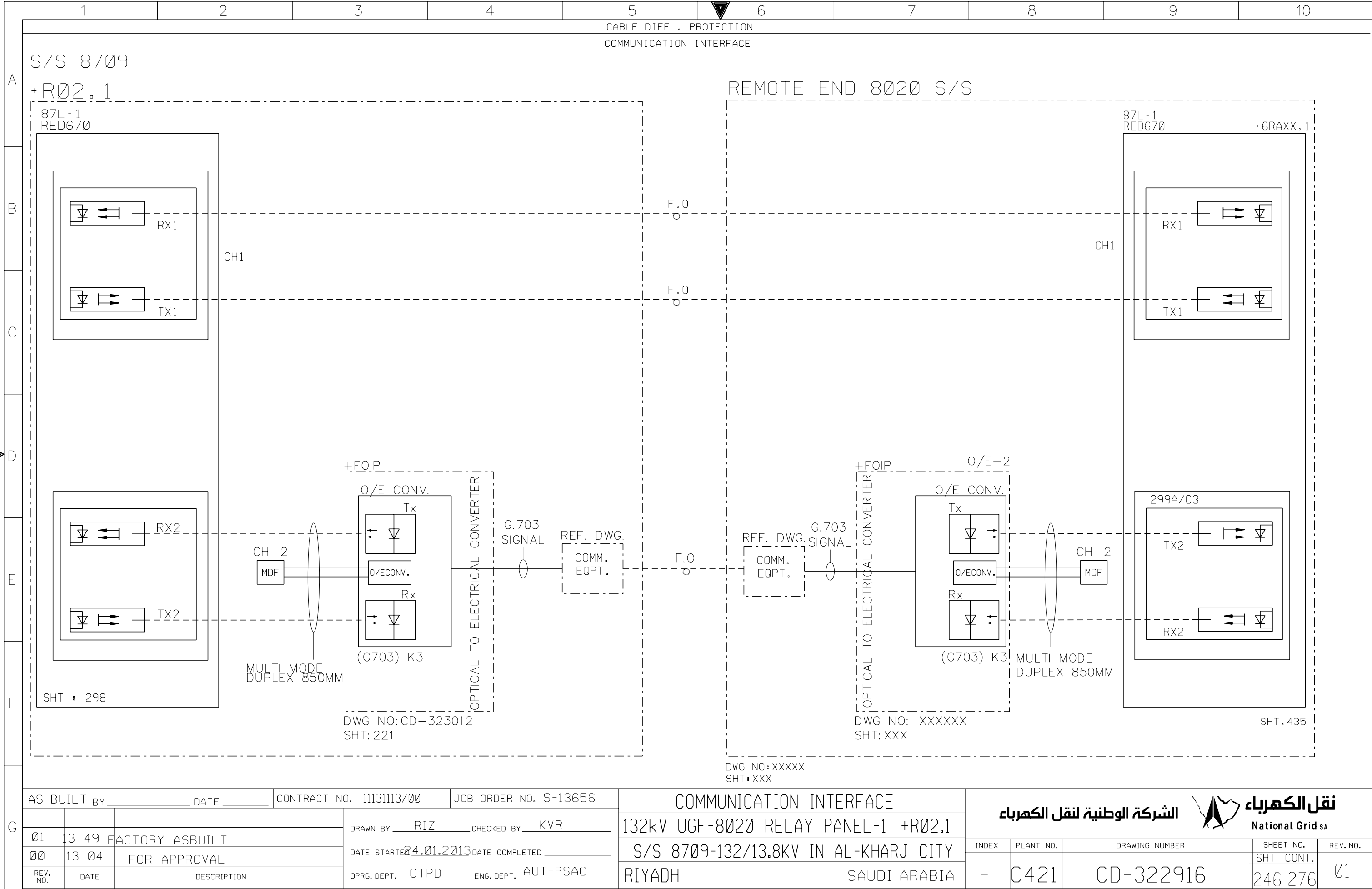


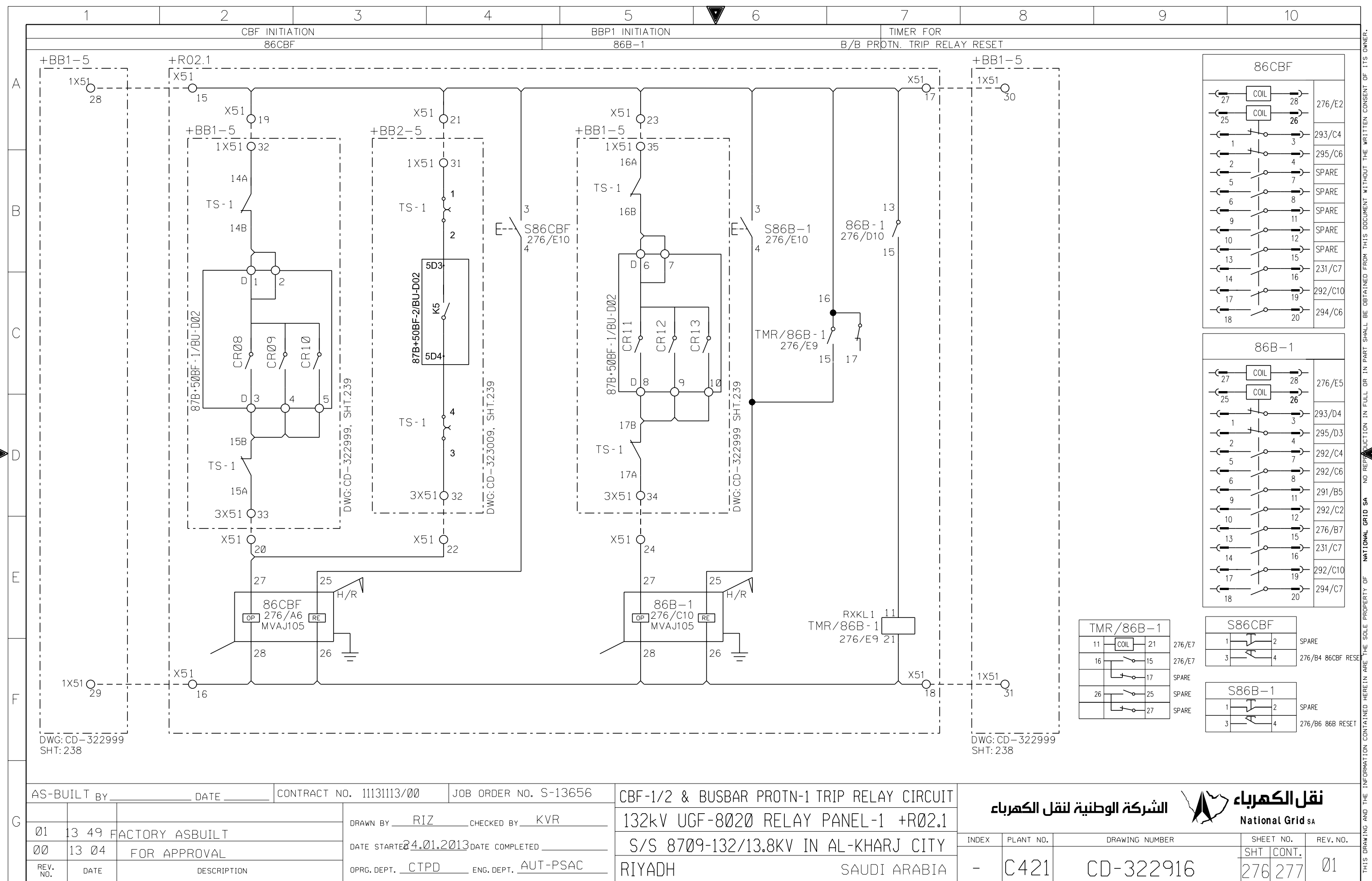
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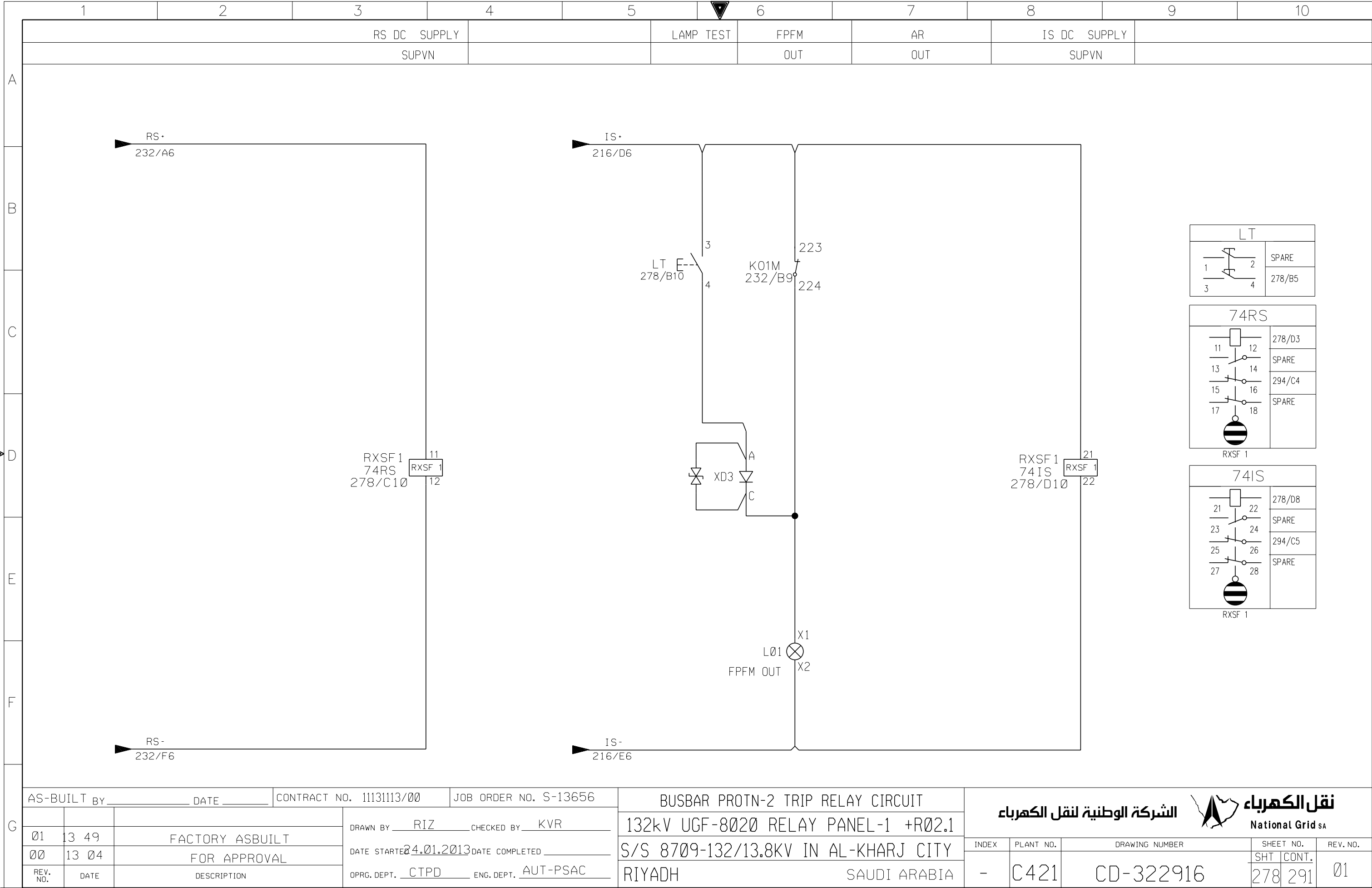
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VECTOR

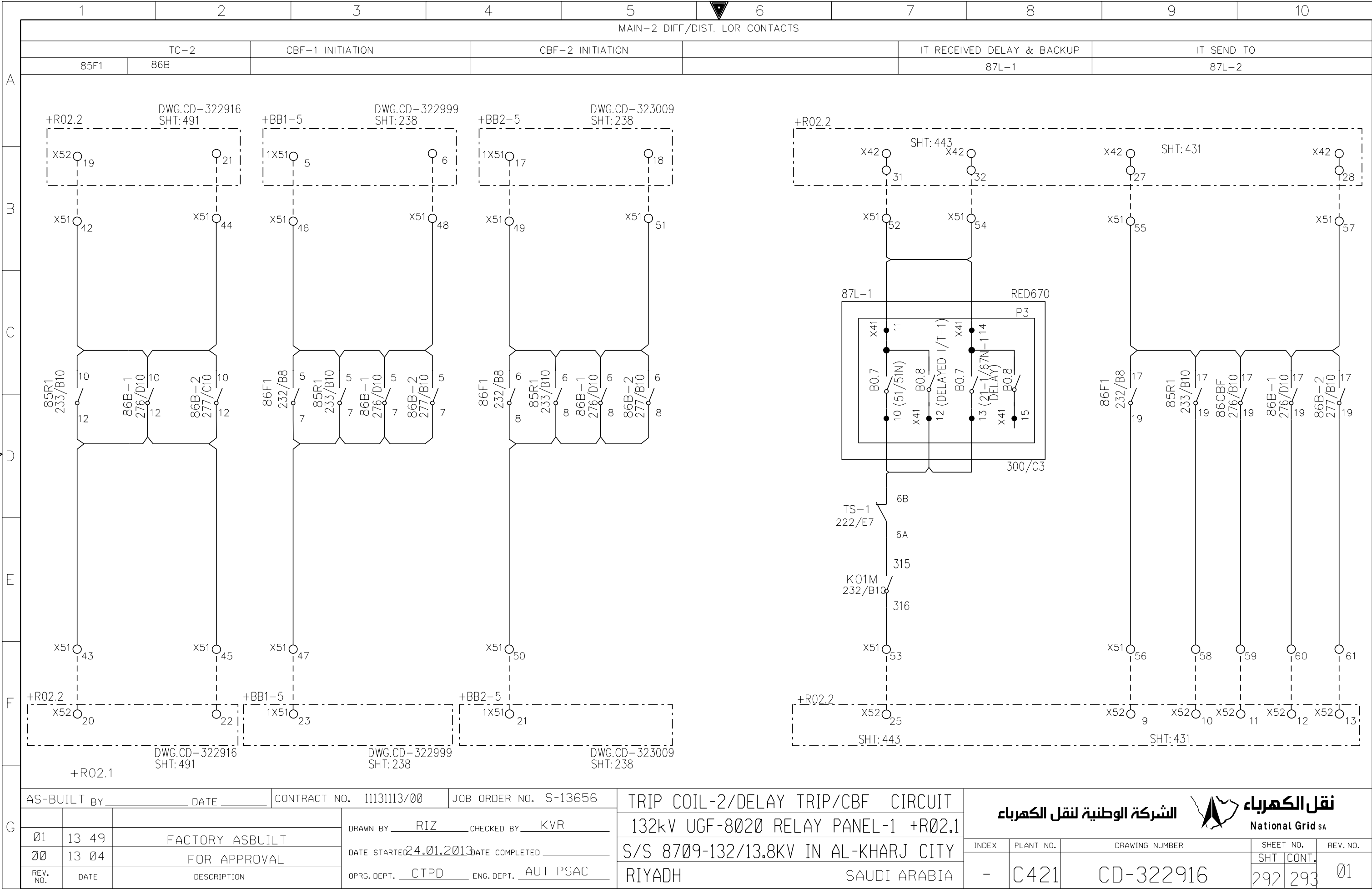
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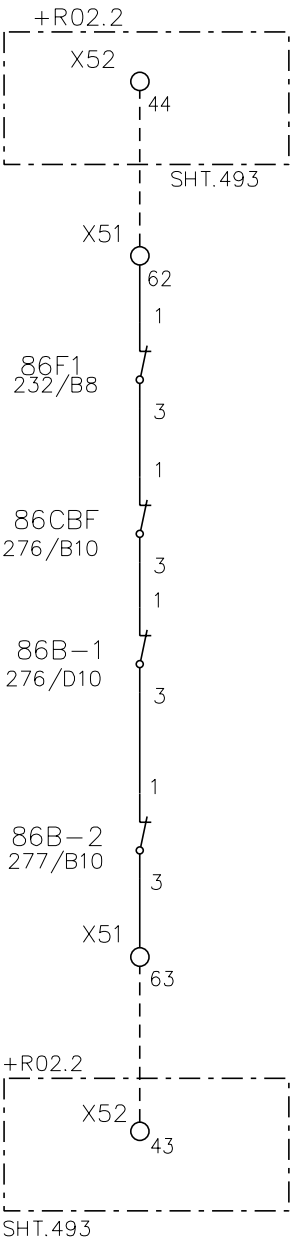


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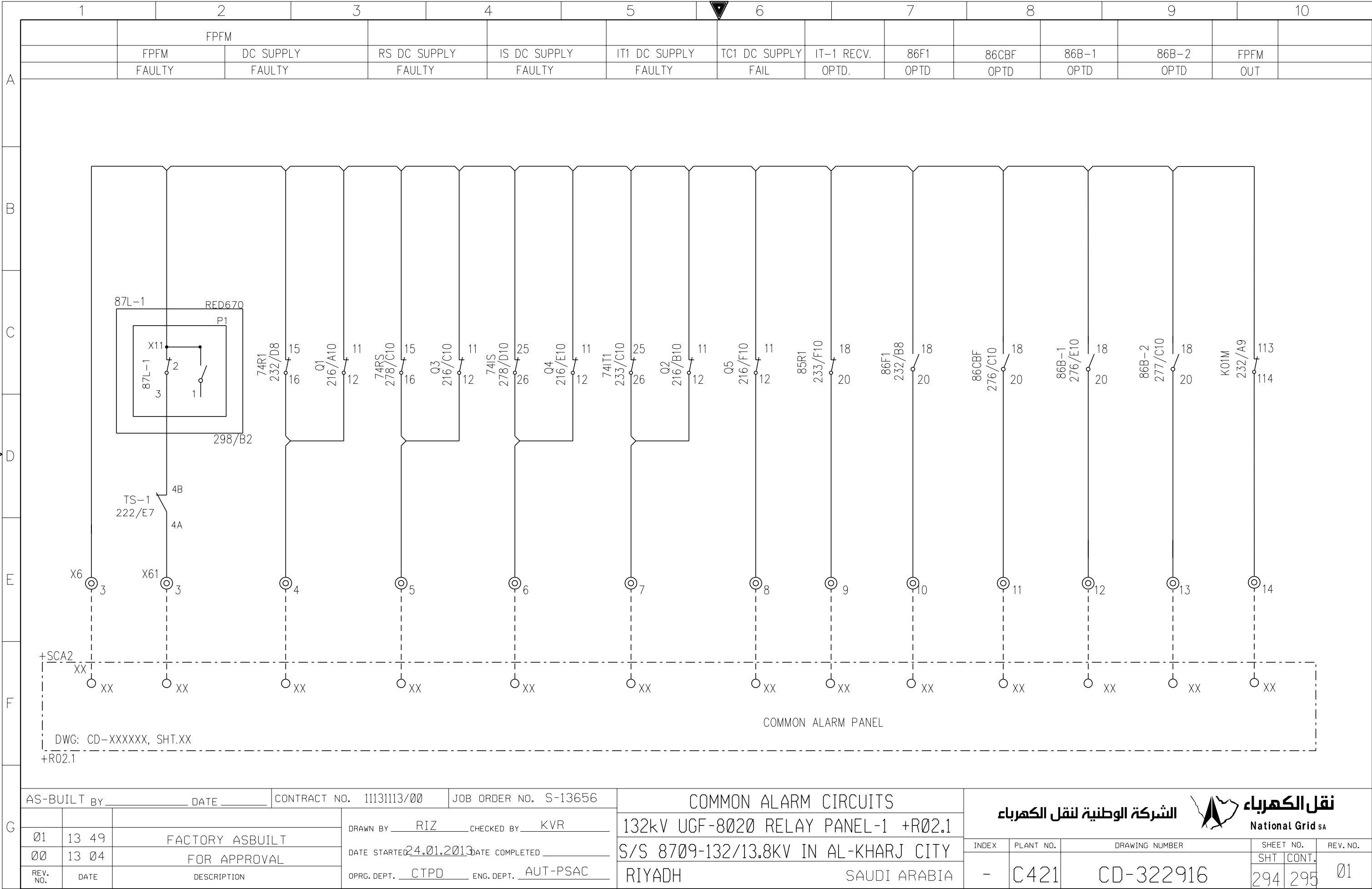



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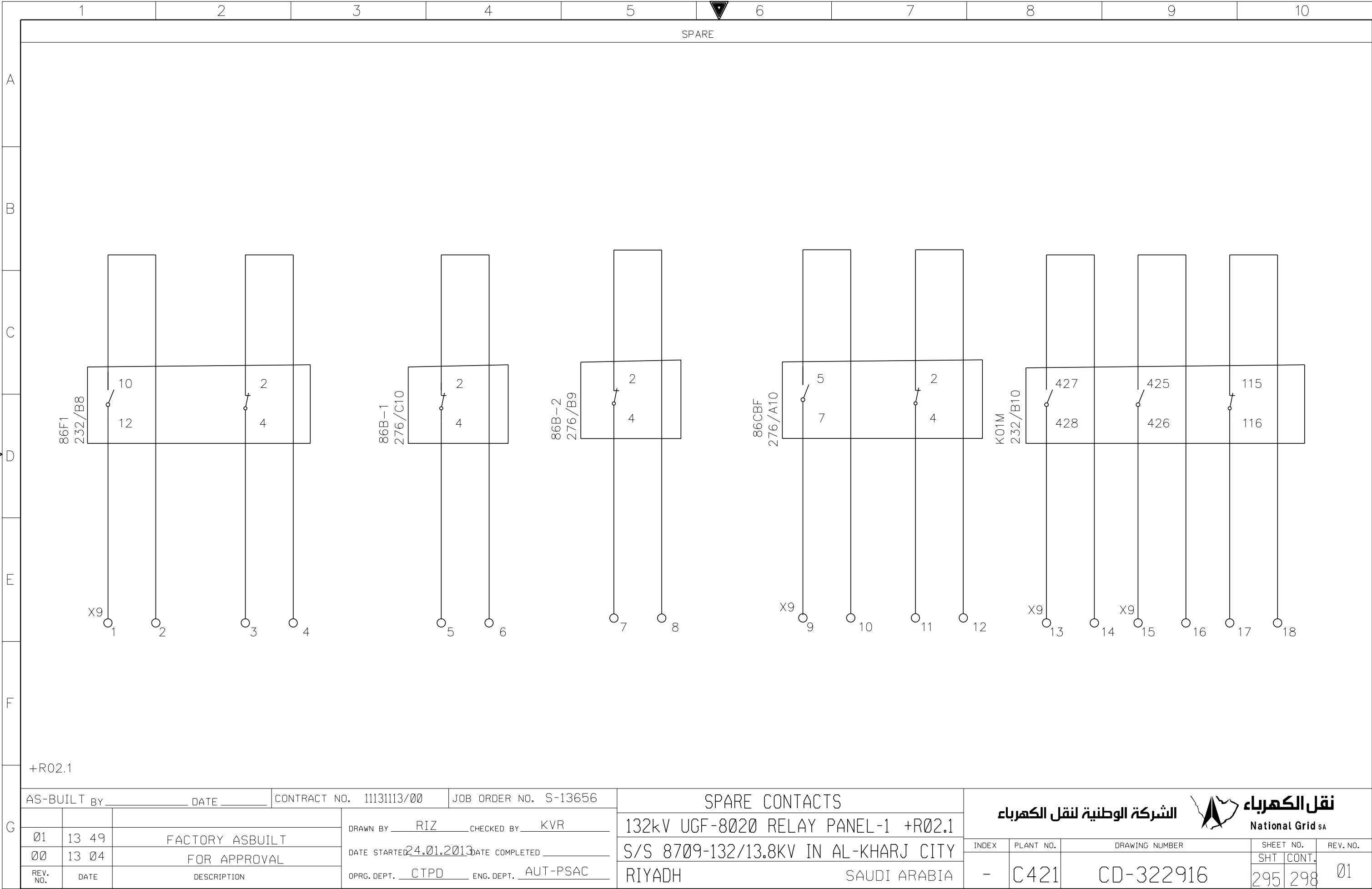
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A	CLOSE BLOCKING														
	PROTECTION														
B															
C															
D															
E															
F															
G	AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CLOSE BLOCK CIRCUIT			<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>				
	01	13 49	FACTORY ASBUILT	DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>			132kV UGF-8020 RELAY PANEL-1 +R02.1			INDEX		PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	00	13 04	FOR APPROVAL	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY							SHT	CONT.
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>			RIYADH SAUDI ARABIA			-		C421	CD-322916	293	294



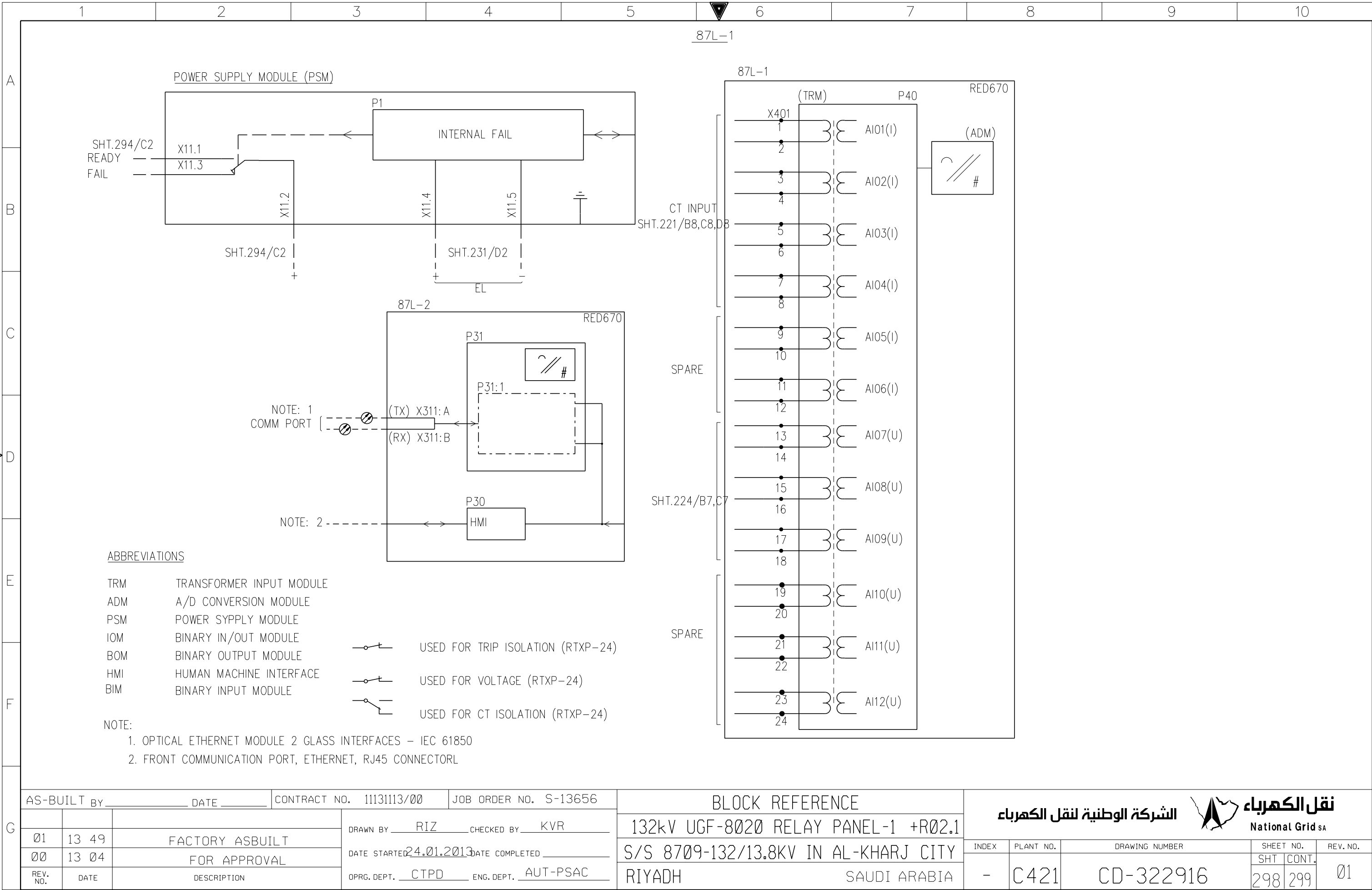
+R02.1






AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COMMON ALARM CIRCUITS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>						
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY _____ RIZ _____ CHECKED BY _____ KVR			132kV UGF-8020 RELAY PANEL-1 +R02.1				INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
00	13 04		DATE STARTED 24.01.2013 DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY							SHT	CONT.	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC			RIYADH SAUDI ARABIA							-	C421	



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	1	2	3	4	5	6	7	8	9	10																																																																						
A	87L-1																																																																															
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G	<table><tr><td colspan="2">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="2">BLOCK REFERENCE</td><td colspan="2"><div>الشركة الوطنية لنقل الكهرباء</div><div> نقل الكهرباء National Grid sa</div></td></tr><tr><td colspan="2">01</td><td colspan="2">13 49</td><td colspan="2">FACTORY ASBUILT</td><td colspan="2">DRAWN BY RIZ CHECKED BY KVR</td><td colspan="2">132kV UGF-8020 RELAY PANEL-1 +R02.1</td><td colspan="2">INDEX</td><td colspan="2">PLANT NO.</td><td colspan="2">DRAWING NUMBER</td><td colspan="2">SHEET NO.</td><td colspan="2">REV. NO.</td></tr><tr><td colspan="2">00</td><td colspan="2">13 04</td><td colspan="2">FOR APPROVAL</td><td colspan="2">DATE STARTED 24.01.2013 DATE COMPLETED _____</td><td colspan="2">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td><td colspan="2">-</td><td colspan="2">C421</td><td colspan="2">CD-322916</td><td colspan="2">SHT 299</td><td colspan="2">CONT. 300</td></tr><tr><td colspan="2">REV. NO.</td><td colspan="2">DATE</td><td colspan="2">DESCRIPTION</td><td colspan="2">OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC</td><td colspan="2">RIYADH SAUDI ARABIA</td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2">01</td></tr></table>										AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		BLOCK REFERENCE		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>		01		13 49		FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8020 RELAY PANEL-1 +R02.1		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.		00		13 04		FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-		C421		CD-322916		SHT 299		CONT. 300		REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA										01	
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		BLOCK REFERENCE		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>																																																																								
01		13 49		FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8020 RELAY PANEL-1 +R02.1		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.																																																														
00		13 04		FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-		C421		CD-322916		SHT 299		CONT. 300																																																														
REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA										01																																																														

87L-1

BINARY INPUT CARD

BIM P3

RED670

LOCATION=P3

PLANT ADAPTED CONFIGURATION

SHT.231/D3 { + -- X31 1 BI.01 // CB ON

SHT.231/D3 { + -- 2 BI.02 // CB OFF

SHT.231/D4 { + -- 3 BI.03 // 104 ON

SHT.231/D4 { + -- 4 BI.04 // 106 ON

SHT.231/D5 { + -- 5 BI.05 // VT MCB TRIP

SHT.231/D5 { + -- 6 BI.06 // CB READY

SHT.231/D6 { + -- 7 BI.07 // 86F1 OPTD.

SHT.231/D7 { + -- 8 BI.08 // 85R1 OPTD.

SHT.231/D8,D9,D10 { + -- 9 X32 1 BI.09 // 86CBF OPTD.

SHT.231/D8,D9,D10 { + -- 2 BI.10 // 86B-1 OPTD.

SHT.231/D8,D9,D10 { + -- 3 BI.11 // 86B-2 OPTD.

SHT.231/D8,D9,D10 { + -- 4 BI.12 // 86F2 OPTD.

SHT.231/D8,D9,D10 { + -- 5 BI.13 // 86BU OPTD.

SHT.231/D8,D9,D10 { + -- 6 BI.14 // 85R2 OPTD.

SHT.231/D8,D9,D10 { + -- 7 BI.15 // FPFM OUT

SHT.231/D8,D9,D10 { + -- 8 BI.16 // SPARE

SPARE { + -- 9 16

87L-1

BINARY INPUT CARD

BIM P5

RED670

LOCATION=P5

PLANT ADAPTED CONFIGURATION

SHT.291/C8,C9 { + -- X51 1 BI.01 // TSR

SHT.291/C8,C9 { + -- 2 BI.02 // TSR

SHT.291/C8,C9 { + -- 3 BI.03 // SPARE

SHT.291/C8,C9 { + -- 4 BI.04 // SPARE

SHT.291/C8,C9 { + -- 5 BI.05 // SPARE

SHT.291/C8,C9 { + -- 6 BI.06 // SPARE

SHT.291/C8,C9 { + -- 7 BI.07 // SPARE

SHT.291/C8,C9 { + -- 8 BI.08 // SPARE

SPARE { + -- 9 X52 1 BI.09 // SPARE

SPARE { + -- 2 BI.10 // SPARE

SPARE { + -- 3 BI.11 // SPARE

SPARE { + -- 4 BI.12 // SPARE

SPARE { + -- 5 BI.13 // SPARE

SPARE { + -- 6 BI.14 // SPARE

SPARE { + -- 7 BI.15 // SPARE

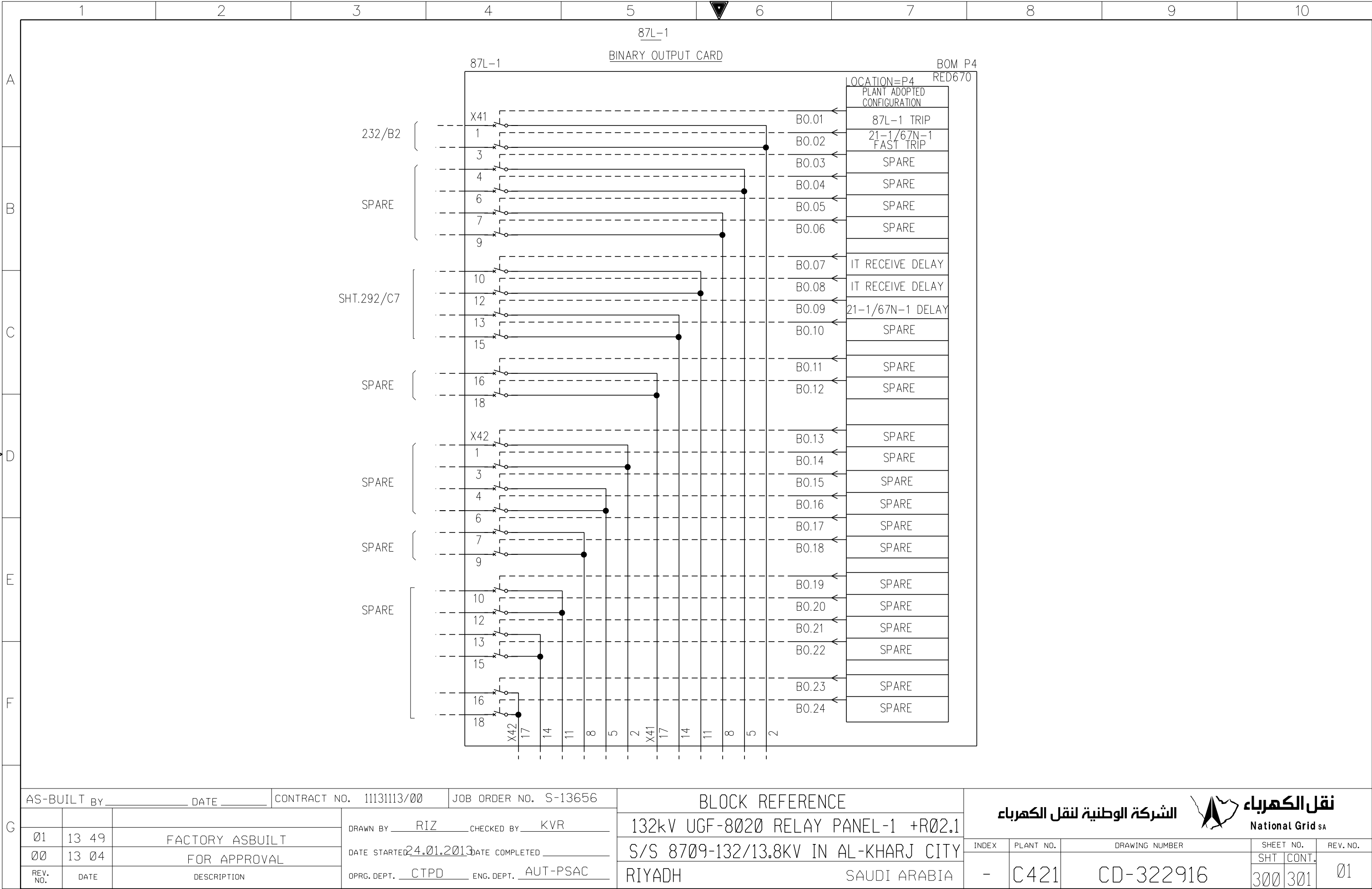
SPARE { + -- 8 BI.16 // SPARE

SPARE { + -- 9 16

NG/D2-D (2012/01)

DMS VECTOR

NGD200



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	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G	AS-BUILT BY _____ DATE _____				CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TERMINAL BLOCKS PANEL +R01.1	
	01	13 49	FACTORY ASBUILT		DRAWN BY _____ RIZ _____ CHECKED BY _____ KVR		132kV UGF-8020 RELAY PANEL-1 +R02.1		الشركة الوطنية لنقل الكهرباء	
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		National Grid sa	
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC		RIYADH SAUDI ARABIA		INDEX	PLANT NO.
									-	C421
									DRAWING NUMBER	
									SHEET NO.	
									SHT	CONT.
									301	411
									REV. NO.	
									01	

REFERENCE	X1 CT CKT.				
221/C5	1				1
221/C5	2				2
221/C5	3				3
221/C5	4				4
221/D5	5				5
221/D5	6				6
221/D5	7				7
221/D5	8				8
221/D5	9				9
SPARE	10				10

REFERENCE	X2 VT CKT.				
222/B4	1				1
222/B4	2				2
222/C4	3				3
222/C4	4				4
SPARE	5				5

REFERENCE	X3 AC CKT.				
211/A3	1				1
211/C3	2				2
211/A3	3				3
211/C3	4				4
211/B3	5				5
211/C3	6				6
211/B3	7				7
211/C3	8				8
SPARE	9				9
SPARE	10				10

REFERENCE	XTJ T.JACK				
211/D3	1				1
211/D3	2				2
211/D3	3				3
211/D3	4				4
SPARE	5				5

REFERENCE	XSH SPACE HEATER				
211/E6	1				1
211/F6	2				2
SPARE	3				3

REFERENCE	X6 ALM. CKT.				
212/C5	1				1
212/C5	2				2
294//E1	3				3

REFERENCE	X61 ALM. CKT.				
212/E5	1				1
212/E5	2				2
294/E1	3				3
294/E2	4				4
294/E4	5				5
294/E6	6				6
294/E7	7				7
294/E7	8				8
SPARE	9				9
SPARE	10				10
SPARE	11				11
SPARE	12				12
SPARE	13				13
SPARE	14				14
SPARE	15				15

REFERENCE	X41 DC CKTS.				
216/B3	1				1
216/B3	2				2
216/B3	3				3
216/C3	4				4
216/C3	5				5
216/C3	6				6
216/C7	7				7
216/C7	8				8
216/C7	9				9
216/C7	10				10
216/D3	11				11
216/D3	12				12
216/D7	13				13
216/D7	14				14
216/D7	15				15
216/D7	16				16
216/E3	17				17
216/E3	18				18
SPARE	19				19
SPARE	20				20
231/B3	21				21
231/B4	22				22
231/B4	23				23
231/B5	24				24
231/B5	25				25
231/B6	26				26
231/B8	27				27
231/B9	28				28
SPARE	29				29
SPARE	30				30
SPARE	31				31

REFERENCE	X51 CON & PROTN CKTS				
216/E7	1				1
216/E7	2				2
231/D3	3				3
231/D4	4				4
231/D5	5				5
231/D6	6				6
231/D6	7				7
231/D6	8				8
231/D6	9				9
231/D7	10				10
231/D8	11				11
SPARE	12				12
SPARE	13				13
SPARE	14				14
276/A2	15				15
276/F2	16				16
276/A7	17				17
276/F7	18				18
276/A2	19				19
276/E2	20				20
276/A4	21				21
276/E4	22				22
276/A5	23				23
276/E5	24				24
277/A4	25				25
277/F4	26				26
277/A7	27				27
277/F7	28				28
277/A5	29				29
277/F5	30				30
291/A4	31				31
291/C4	32				32
291/E4	33				33
291/A6	34				34
291/C6	35				35
291/A7	36				36
291/C7	37				37
291/A8	38				38
291/B8	39				39
291/A10	40				40
291/B10	41				41
292/B1	42				42
292/F1	43				43
292/B2	44				44
292/F2	45				45
292/B3	46				46
292/F3	47				47
292/B4	48				48
292/B5	49				49
292/F5	50				50

REFERENCE	X51 CON & PROTN CKTS				
292/B6	51				51
292/B7	52				52
292/F7	53				53
292/B8	54				54
292/B9	55				55
292/F9	56				56
292/B10	57				57
292/F10	58				58
293/B4	59				59
293/E4	60				60
SPARE	61				61
SPARE	62				62
SPARE	63				63
SPARE	64				64
SPARE	65				65

REFERENCE	X9 SPARE				
295/E1	1				1
295/E1	2				2
295/E2	3				3
295/E2	4				4
295/E4	5				5
295/E4	6				6
295/E5	7				7
295/E5	8				8
295/E6	9				9
295/E6	10				10
295/E7	11				11
296/E7	12				12
295/E8	13				13
295/E8	14				14
295/E9	15				15
295/E9	16				16
SPARE	17				17
SPARE	18				18
SPARE	19				19
SPARE	20				20



National Grid sa

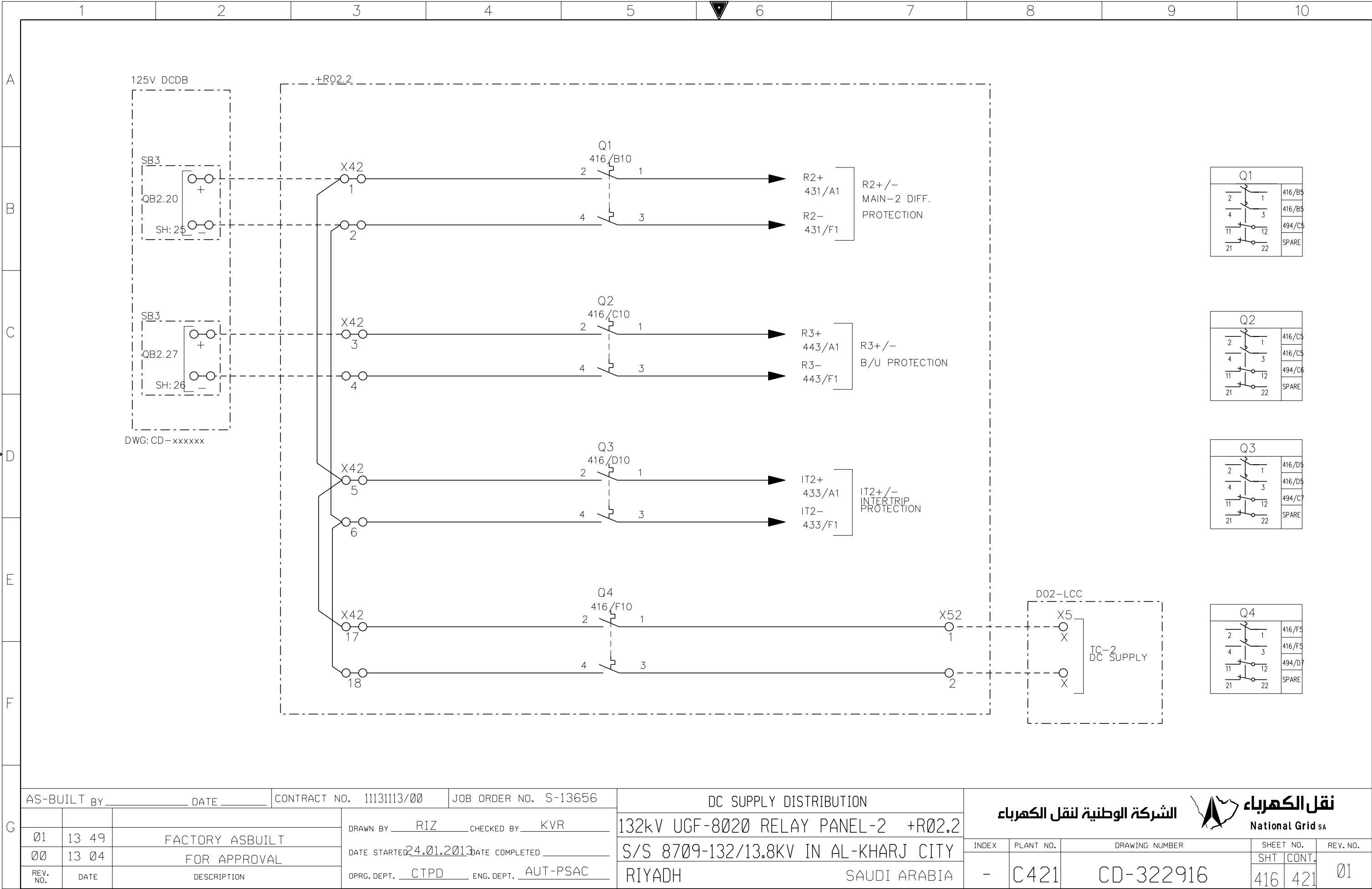
SHEET NO.		REV. NO.	
SHT	CONT.		
301	411	01	

DMS

VECTOR

NGD200

NG/D2-D (2012/01)



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

DC SUPPLY DISTRIBUTION

132kV UGF-8020 RELAY PANEL-2 +R02.2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

نقل الكهرباء

National Grid sa

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

REV. NO.

-

C421

CD-322916

416

421

01

FACTORY ASBUILT

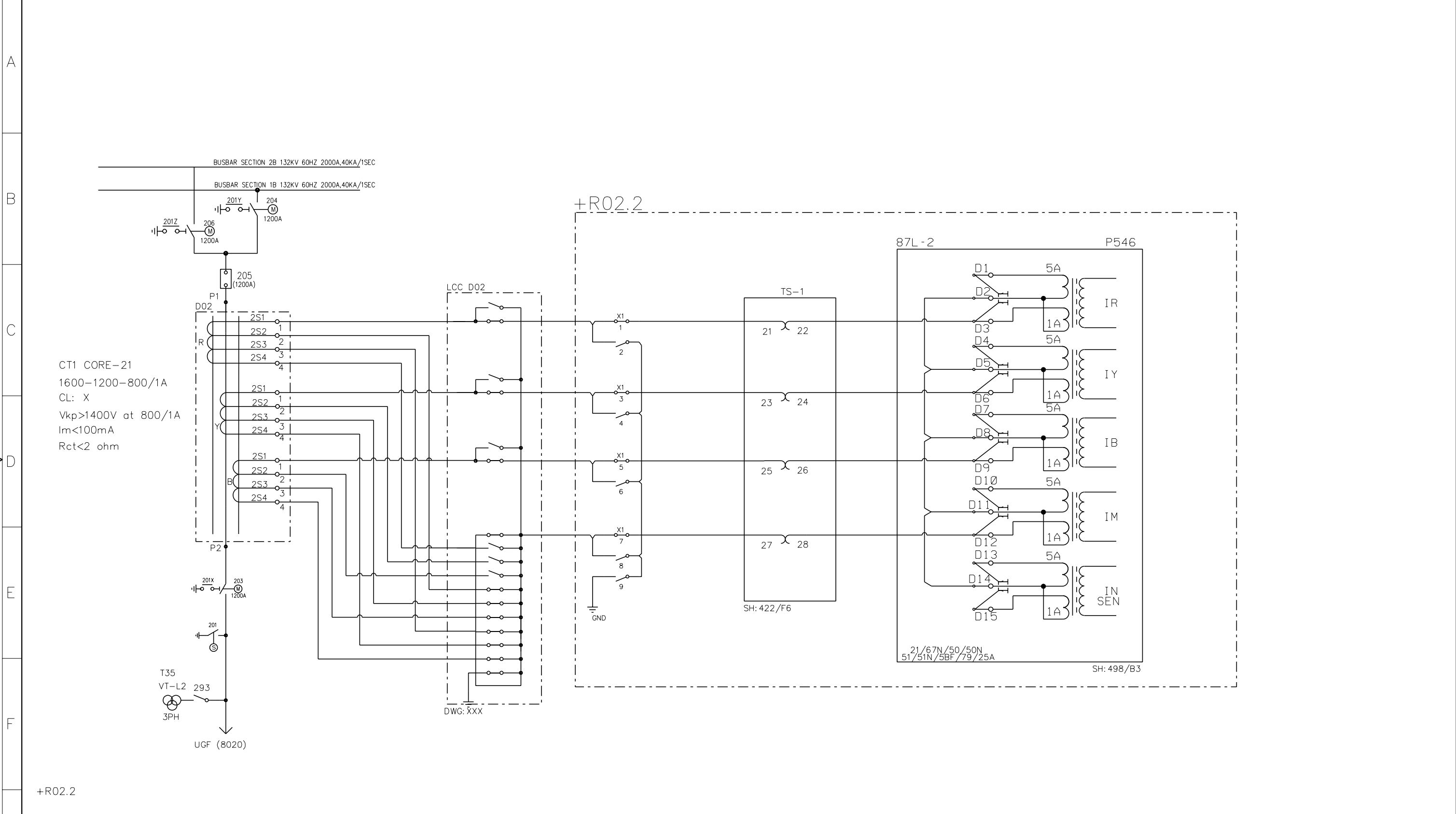
FOR APPROVAL


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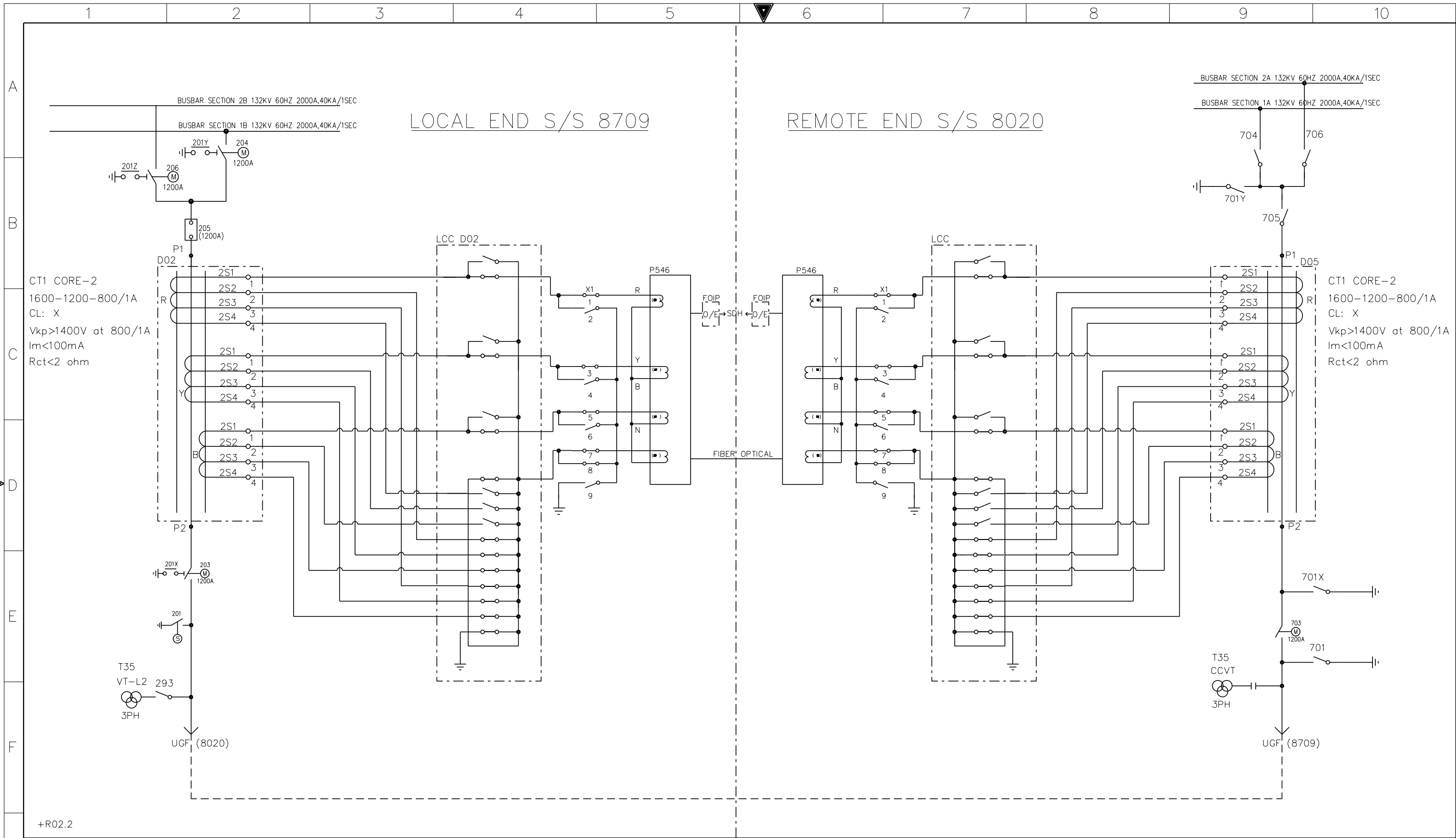
DATE STARTED 24.01.2013 DATE COMPLETED _____

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

DRAWN BY RIZ CHECKED BY KVR



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CURRENT TRANSFORMER INPUTS -87L-2		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء National Grid sa</div>				
				DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		132kV UGF-8020 RELAY PANEL-2 +R02.2							
	01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		-	C421	CD-322916	SHT 421	CONT. 422
	REV. NO.	DATE	DESCRIPTION										



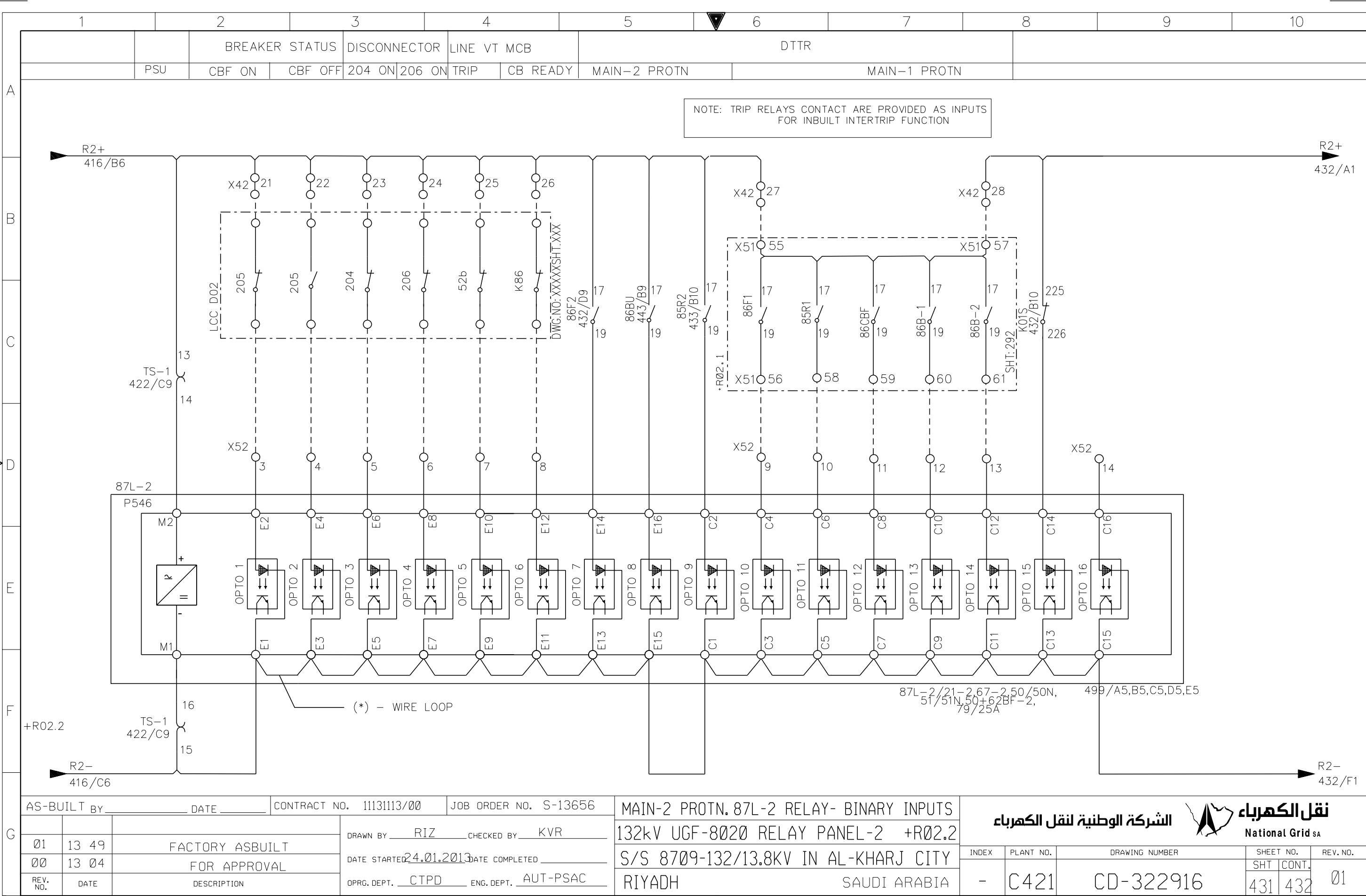
+R02.2

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

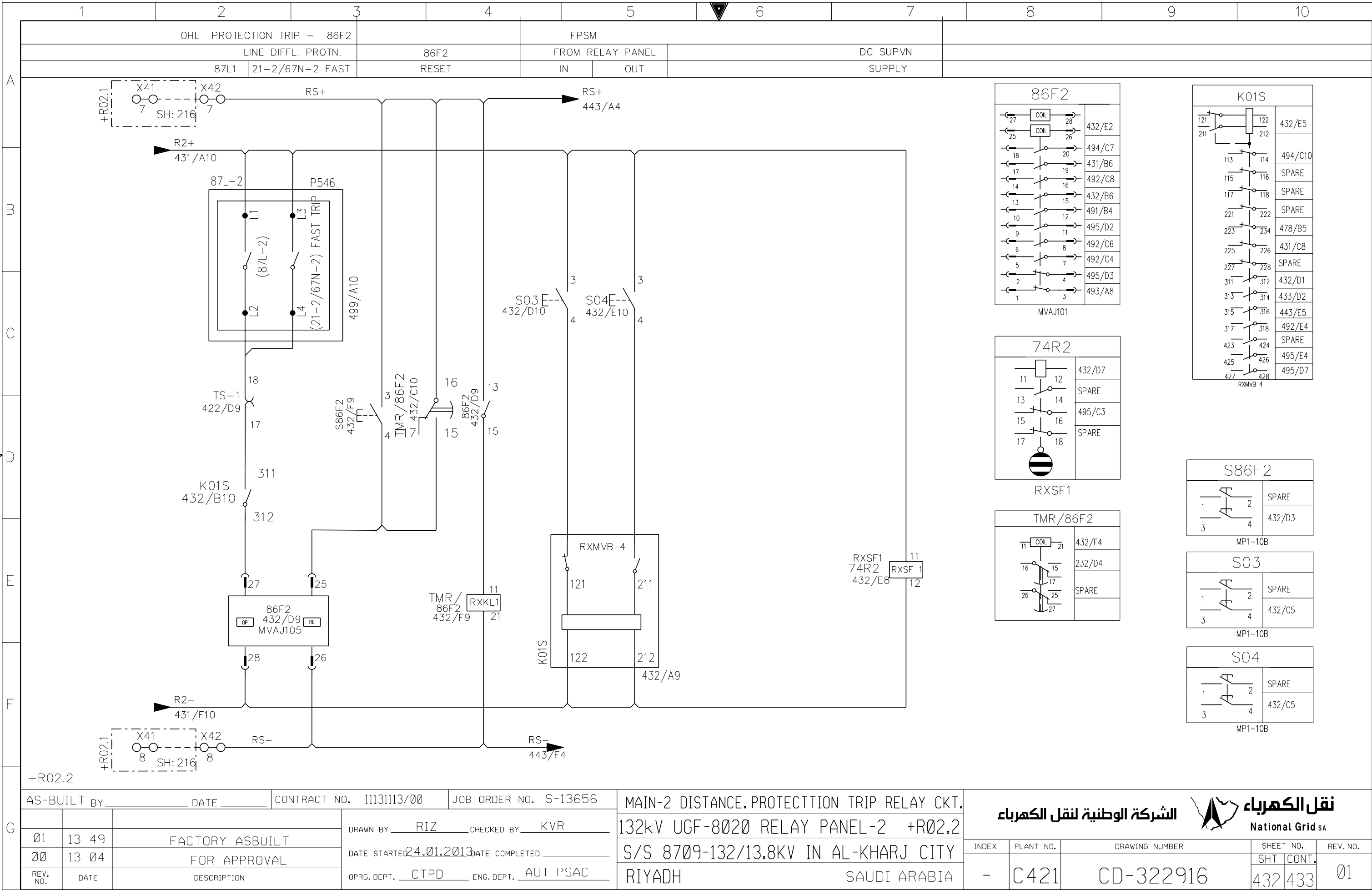
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____
			OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC
REV. NO.	DATE	DESCRIPTION	

COMMUNICATION CIRCUITS
132kV UGF-8020 RELAY PANEL-2 +R02.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid SA				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322916	SHT 423	CONT. 431
				01



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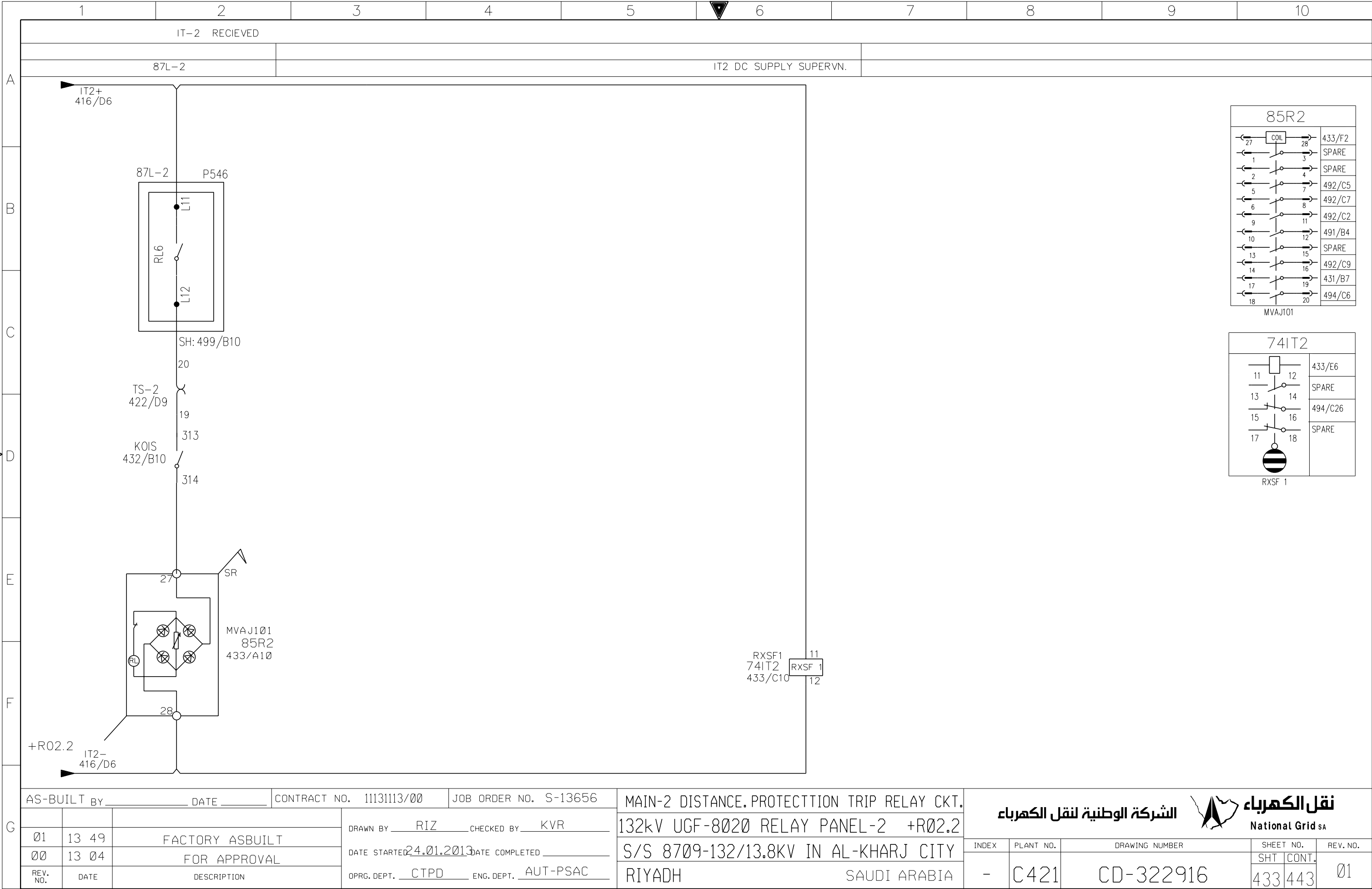


AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

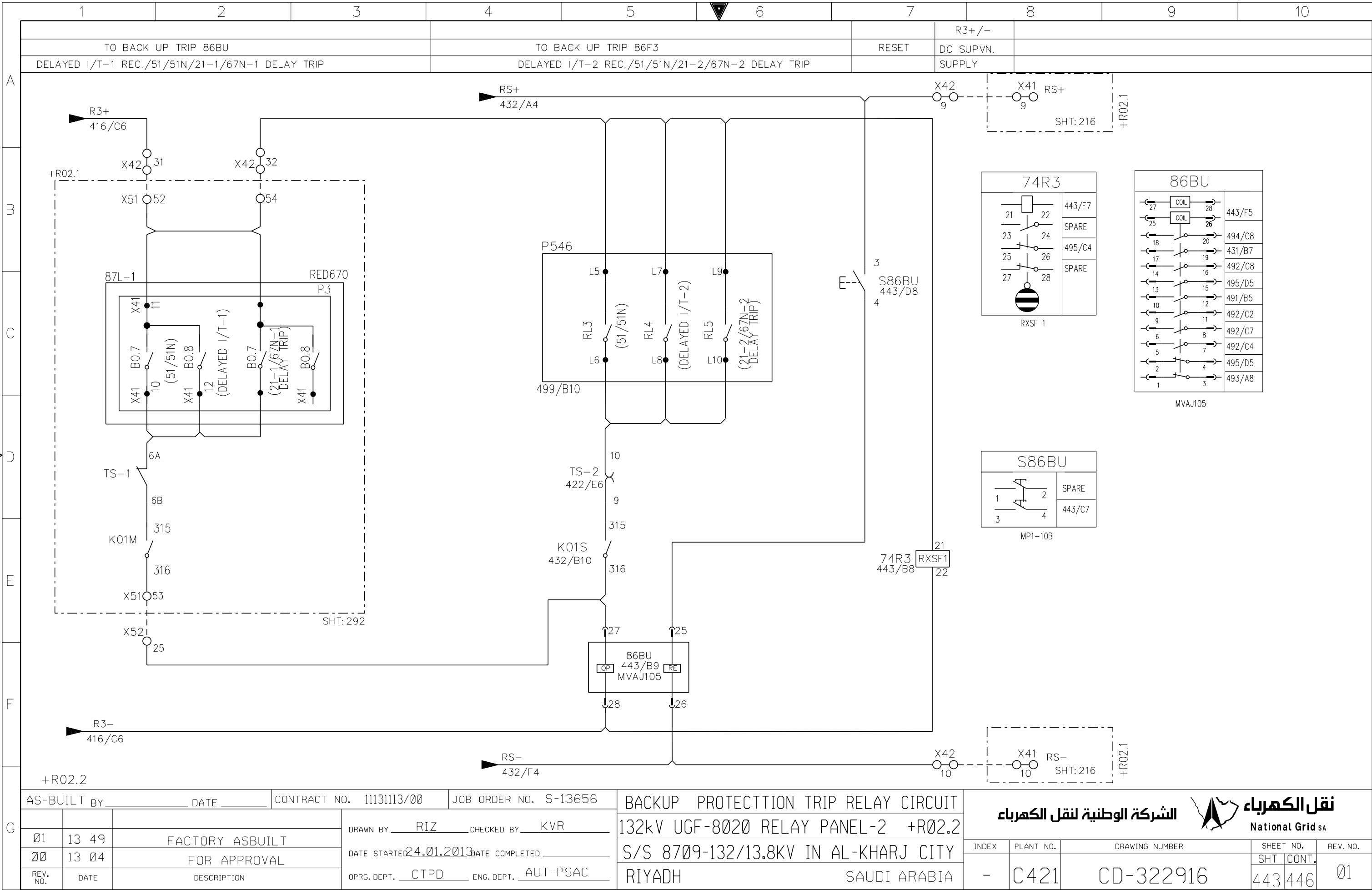
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00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

MAIN-2 DISTANCE.PROTECTION TRIP RELAY CKT.
132kV UGF-8020 RELAY PANEL-2 +R02.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

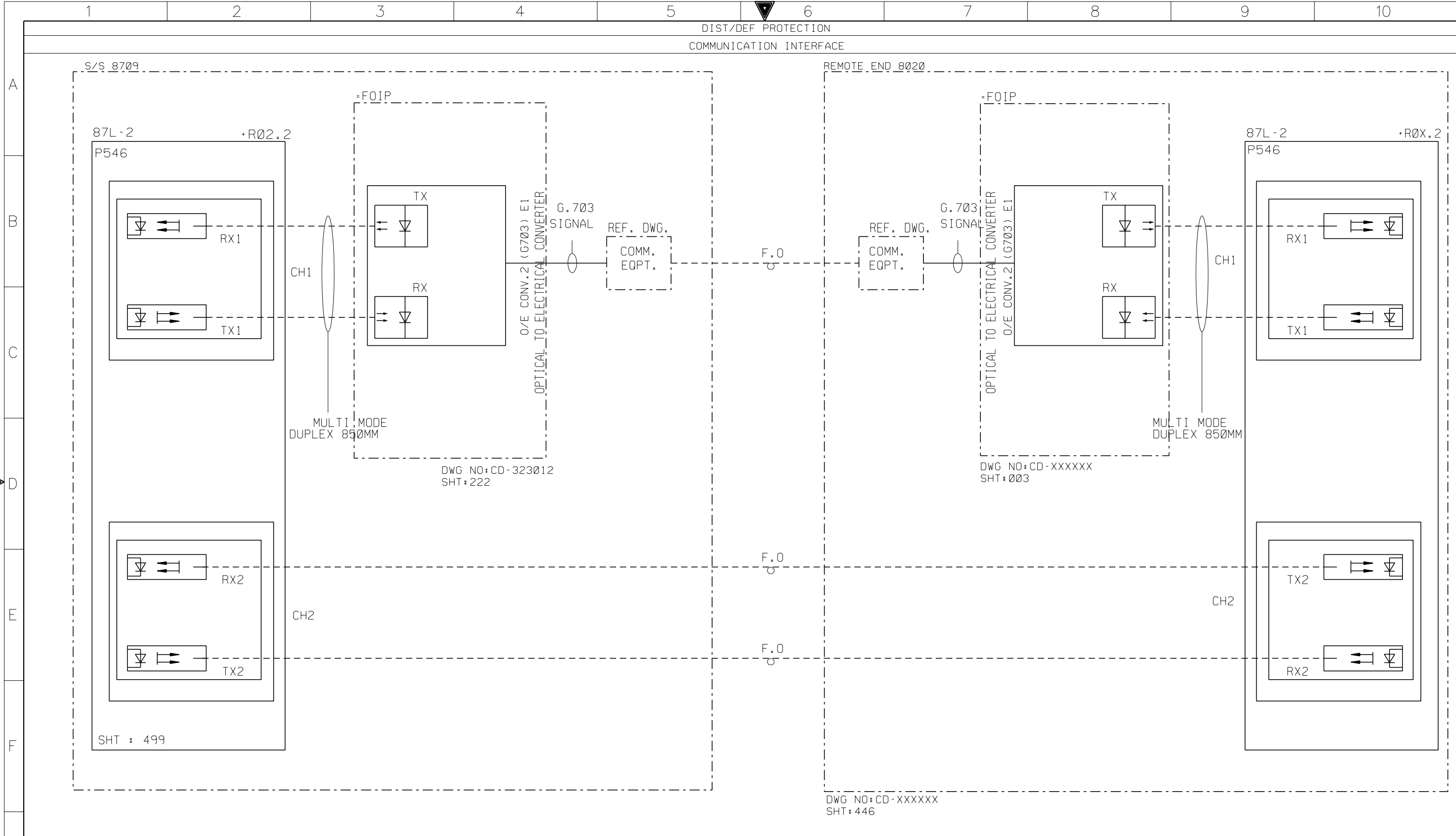
الشركة الوطنية لنقل الكهرباء National Grid sa				
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				01



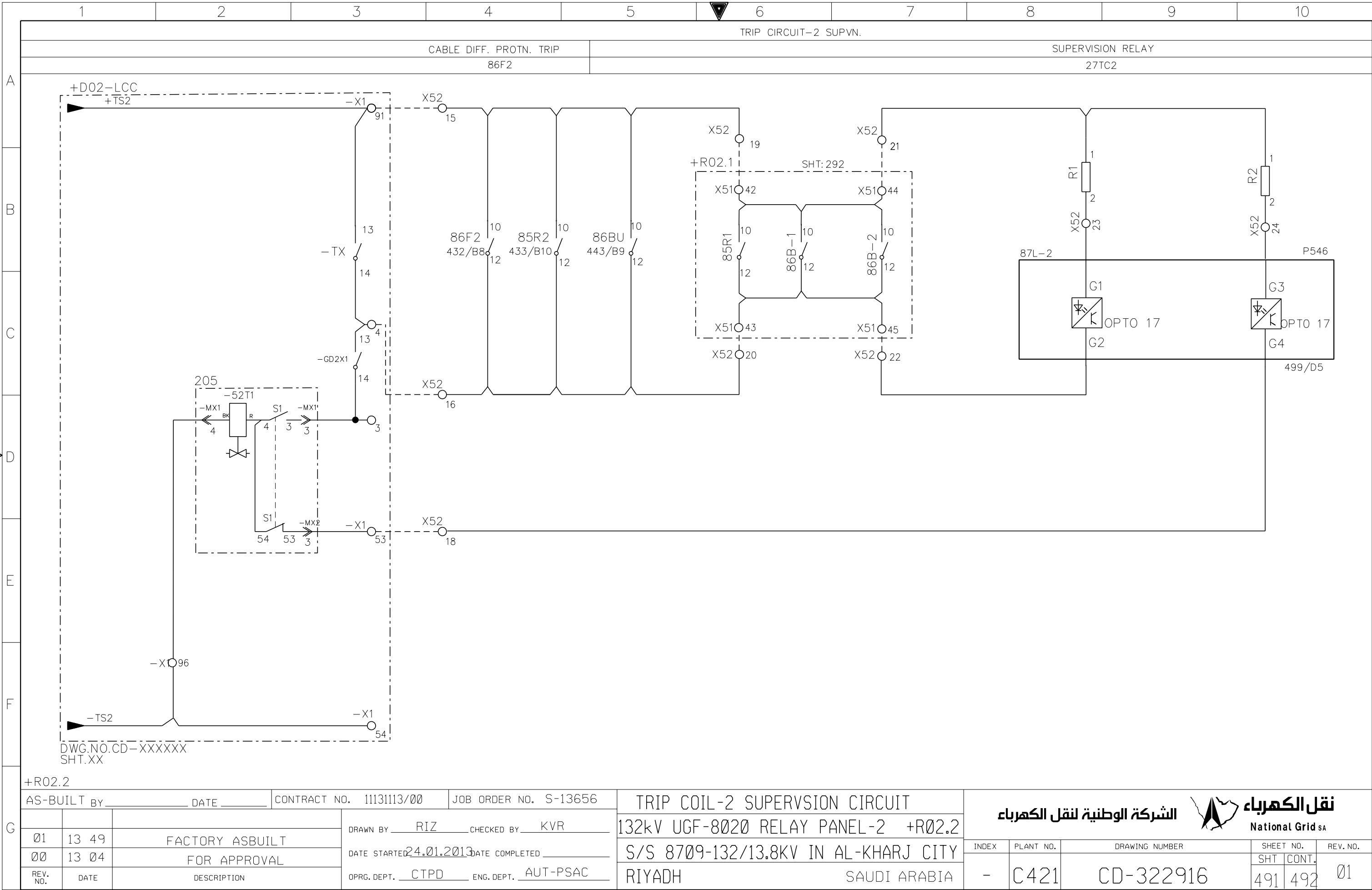
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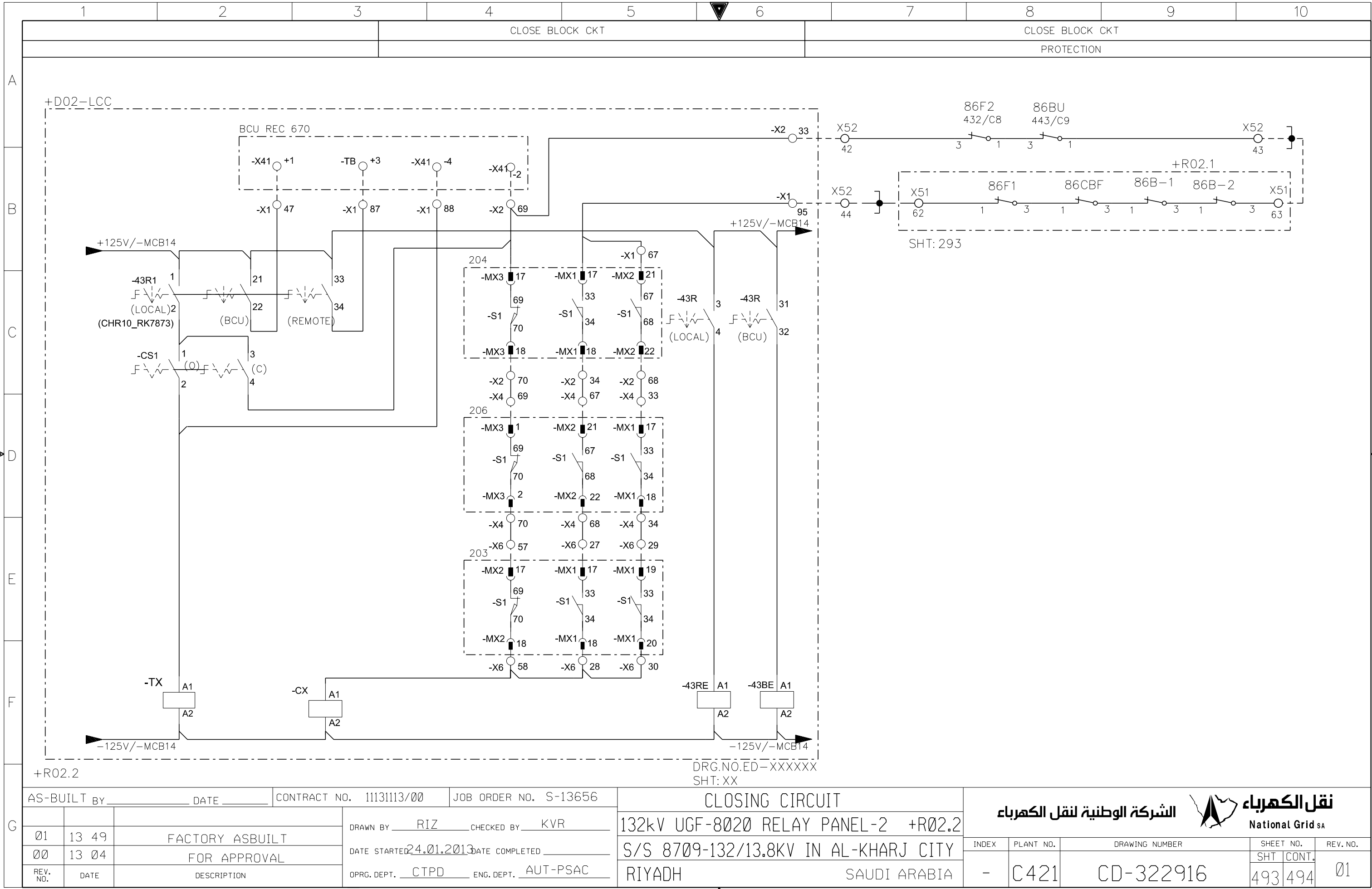
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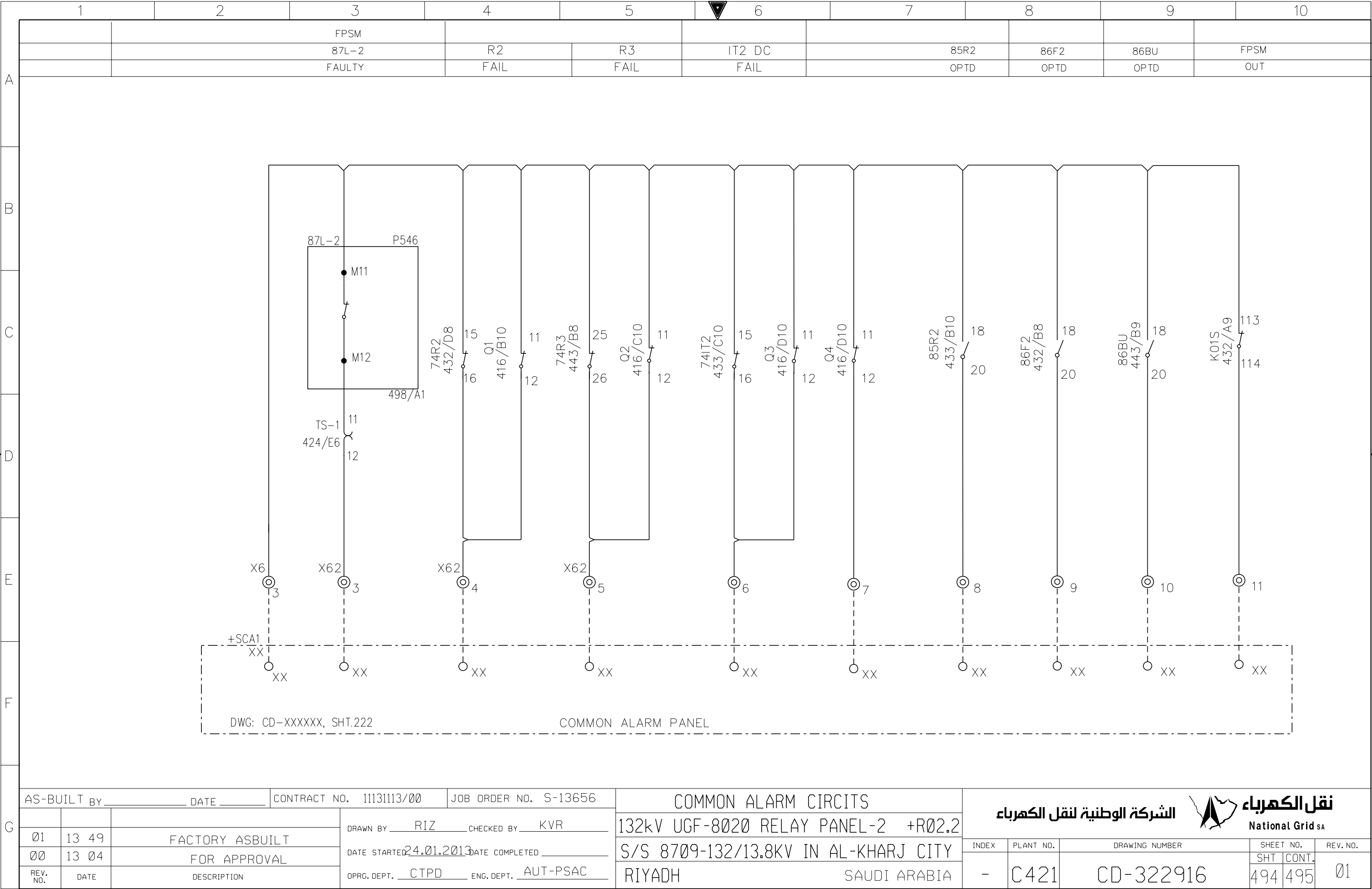
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COMMUNICATION INTERFACE			<div>نقل الكهرباء</div> <div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>					
				DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		132kV UGF-8020 RELAY PANEL-2 +R02.2									
	01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY			INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
	00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA						-	C421	
	REV. NO.	DATE	DESCRIPTION							446	478	01			




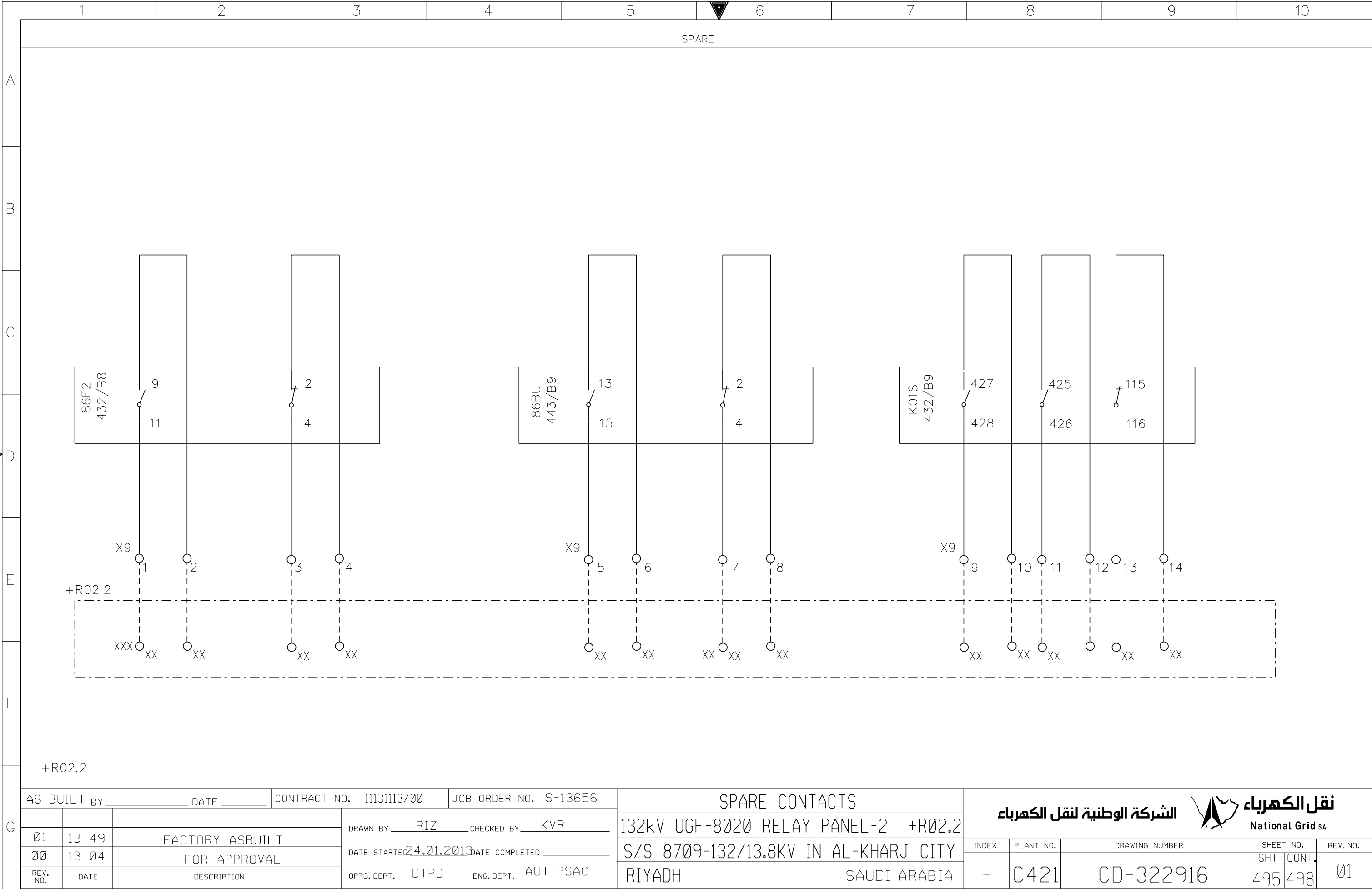
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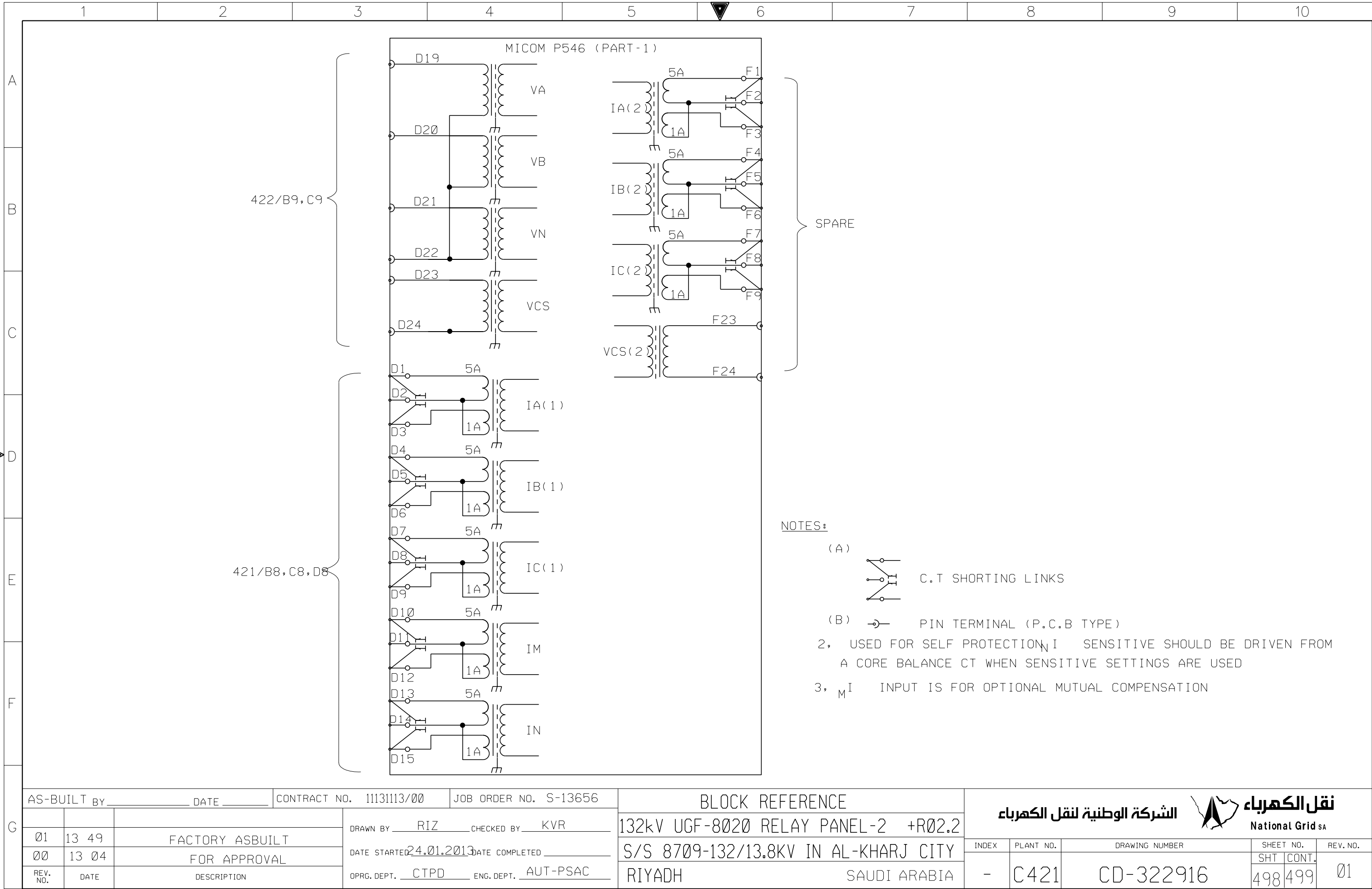


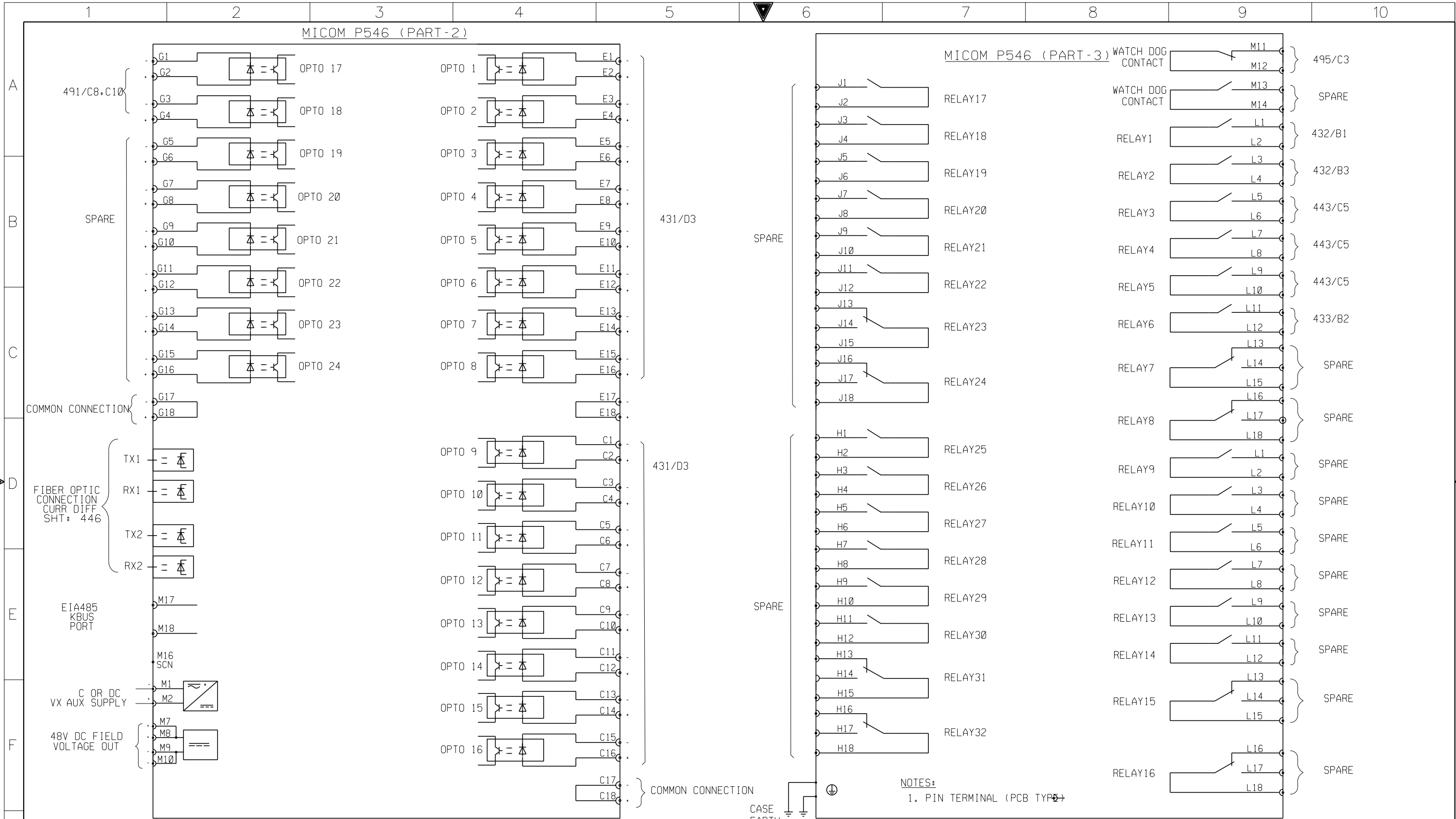
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COMMON ALARM CIRCITS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid SA</div>						
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY _____ RIZ _____ CHECKED BY _____ KVR			132kV UGF-8020 RELAY PANEL-2 +R02.2				INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
00	13 04		DATE STARTED 24.01.2013 DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY							SHT	CONT.	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC			RIYADH SAUDI ARABIA							-	C421	







G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CLOSING CIRCUIT		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء National Grid SA</div>						
				DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		132kV UGF-8020 RELAY PANEL-2 +R02.2									
	01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		-	C421	CD-322916		SHT 499	CONT. 501	01

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G	AS-BUILT BY _____ DATE _____				CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TERMINAL BLOCKS PANEL +R01.2	
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8020 RELAY PANEL-2 +R02.2	
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY	
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA	

REFERENCE	X1 CT CKT.
421/C5	1
421/C5	2
421/C5	3
421/C5	4
421/D5	5
421/D5	6
421/D5	7
421/D5	8
421/E5	9
SPARE	10

REFERENCE	X2 VT CKT.
422/B6	1
422/B6	2
422/C6	3
422/C6	4
SPARE	5

REFERENCE	X3 AC CKT.
411/A3	1
411/B3	2
411/A3	3
411/C3	4
411/B3	5
411/C3	6
411/B3	7
411/C3	8
SPARE	9
SPARE	10

REFERENCE	X62 ALM. CKT.
412/E5	1
412/E5	2
494/E3	3
494/E4	4
494/E5	5
494/E6	6
494/E7	7
494/E8	8
SPARE	9
SPARE	10
SPARE	11
SPARE	12
SPARE	13
SPARE	14
SPARE	15

REFERENCE	X42 DC CKTS.
416/B3	1
416/B3	2
416/B3	3
416/C3	4
416/C3	5
416/C3	6
432/A2	7
432/F2	8
443/A4	9
443/F4	10
SPARE	11
SPARE	12
478/B3	13
478/E3	14
478/B8	15
478/E8	16
416/E3	17
416/E3	18
SPARE	19
SPARE	20
431/B3	21
431/B4	22
431/B4	23
431/B5	24
431/B5	25
431/B6	26
431/B8	27
431/B9	28
SPARE	29
SPARE	30
443/A2	31

REFERENCE	X52 CONTROL & PROTIN CKTS.
416/F7	1
416/F7	2
431/D4	3
431/D4	4
431/D5	5
431/D6	6
431/D6	7
431/D7	8
431/D8	9
431/D8	10
432/C4	11
432/C4	12
443/F2	13
SPARE	14
491/A4	15
491/C4	16
491/E4	17
491/A6	18
491/C6	19
491/A7	20
491/C7	21
491/A8	22
491/B8	23
491/A10	24
443/B10	25
SPARE	26
492/B2	27
492/D2	28
492/B3	29
492/D3	30
492/B4	31
492/D4	32
492/B5	33
492/B6	34
492/D6	35
492/B7	36
492/B8	37
492/D8	38
492/B9	39
492/D9	40
492/A7	41
492/A10	42
492/B7	43
SPARE	44
SPARE	45
SPARE	46
SPARE	47
SPARE	48
SPARE	49
SPARE	50

REFERENCE	X9 SPARE
495/E1	1
495/E2	2
495/E3	3
495/E3	4
495/E5	5
495/E5	6
495/E6	7
495/E6	8
495/E7	9
495/E8	10
495/E8	11
495/E8	12
495/E9	13
495/E9	14
SPARE	15
SPARE	16
SPARE	17
SPARE	18
SPARE	19
SPARE	20
SPARE	21
SPARE	22
SPARE	23
SPARE	24
SPARE	25

REFERENCE	XSH SPACE HEATER
411/E6	1
411/F6	2
SPARE	3

REFERENCE	X6 ALM. CKT.
412/C5	1
412/C5	2
495/E2	3